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NEW NUCLEAR DATA

Summary of New Nuclear Data on Half Lives, Radiations, Relative Isotopic Abundances, Nuclear Moments, Neutron Cross Sections, Reaction Energies, and Masses

Prepared by National Bureau of Standards Nuclear Data Group with the Assistance of Readers

National Bureau of Standards Group: K. Way, C. L. McGinnis, M. Wood, and K. Thew.

Readers: G. Friedlander and G. Scharff-Goldhaber, Brookhaven National Laboratory; P. Axel, University of Illinois; J. R. Stehn, Knolls Atomic Power Laboratory; L. Slack, Naval Research Laboratory; H. Pomerance, J. W. Cobble, F. D. McGowan, B. A. Soldano, and H. Zeldes, Oak Ridge National Laboratory; S. Frankel, University of Pennsylvania; W. E. Meyerhof, Stanford University.

In this issue, Nuclear Science Abstracts presents its annual cumulation of new nuclear data. The material cumulated here is that which has appeared in NSA Vol. 6, Nos. 1 through 23.

ABBREVIATIONS

a	absorption measurement
aβγ	absorption of β's in coincidence with γ's
ace$^-$	absorption of conversion electrons
a coin	measurement by placing absorbers between counters in coincidence
α	total γ-ray conversion coefficient, N_e/N_γ
$\alpha_K, \alpha_L, \ldots$	γ-ray conversion coefficient for electrons ejected from the K,L, ... shell
b	coefficient in angular correlation function, $1 + b \cos^2 \theta$
B	band spectra method
Beγn	measurement by detection of photoneutrons from Be
Calc	calculated value from experimental work reported elsewhere
cc	cloud chamber
ce$^-$	conversion electrons
chem	chemical separation of product following reaction
Cpt	Compton electrons
d	(1) deuteron, (2) descendant of, (3) days, when used as superscript
Dγn, Dγp	measurement by detection of photoneutrons or photoprotons from deuterium
$\bar{E}$	average energy
E_0	resonance energy
$E_\beta, E_\gamma, \ldots$	energy of β ray, energy of γ ray, ...
E_{dis}	disintegration energy
EA	electrostatic analyzer
E1,E2, ...	electric dipole, electric quadrupole
f	fission, in abbreviations for methods of production or detection
F-K	Fermi-Kurie β energy distribution plot
Γ	resonance half-width (the whole width at half-maximum)
g.s.	ground state
I	(1) spin in units of $h/2\pi$; (2) nuclear induction magnetic resonance method
ic	ionization chamber
J	quantum state of compound nucleus in a nuclear reaction. "I" is used to denote the spin of the target nucleus
K/L	α_K/α_L
M	molecular or atomic beam resonance method
M1,M2, ...	magnetic dipole, magnetic quadrupole....
mb	millibarns
Mic	microwave method
mir	measurement by total reflection of neutron beam from mirror surface
ms	mass spectrometer
μ	(1) magnetic moment in units of nuclear magnetons, (2) micron, 10^{-4} cm
μs	microseconds
osc	pile oscillator method
p	(1) proton, (2) predecessor of
para	paramagnetic resonance method
pc	proportional counter
pe$^-$	photo electrons
ppl	photoplates or emulsions
q	electric quadrupole moment in units of barns
Q	reaction energy in Mev
s	(1) spectrometer method, (2) seconds, when used as superscript
S	atomic-spectra measurement
scin	scintillation counter
sl	lens spectrometer
sl;ce$^-$	conversion electrons measured in lens spectrometer
st	strong
sπ	180° spectrometer
$s\pi\sqrt{2}$	double focusing spectrometer
σ	cross section in barns
σ_0	cross section at resonance energy, E_0
σ_a	absorption cross section
σ_{el}	elastic scattering cross section
σ_{in}	inelastic scattering cross section
σ_s	scattering cross section
σ_t	total cross section
t	triton, H^3
τ	half life in units indicated
τ_1, τ_2	half life of upper, lower state
th	thermal

w, vw	weak, very weak	$\gamma(\theta,T)$	numbers of γ's as function of angle and temperature
$\beta\gamma,\gamma\gamma$	$\beta\gamma$ or $\gamma\gamma$ coincidences	(0.123)	β and γ energy values enclosed in parentheses are given for identification purposes
$\beta\gamma(\theta)$	angular correlation of β's and γ's in coincidence		
d,p(θ)	angular distribution of protons with respect to deuteron beam		

Standard journal abbreviations are used.
All energies are given in Mev and all cross sections in barns unless otherwise stated in the tabular material.

MAGNETIC MOMENT STANDARDS

In order to have a consistent basis for recording data on magnetic moments, results have been based on the following values and are without diamagnetic corrections.

$\mu(H^1) = 2.7934$ nuclear magnetons
This value has been adopted arbitrarily because it is the one used as a base in the Table of H. L. Poss, The Properties of Atomic Nuclei, I. Spins, Magnetic Moments and Electric Quadrupole Moments. (Revised, BNL-26 (T-10), (unclassified).) The values reported in the New Nuclear Data summaries are thus directly comparable with those listed in the survey of Poss.

$\nu(Na^{23})/\nu(H^1) = 0.26450$ E. Bleuler, M. Gabriel, Helv. Phys. Acta 20, 67(1947).

$\nu(D)/\nu(H^1) = 0.153506$ F. Bloch, E. C. Levinthal, M. E. Pachard, Phys. Rev. 72, 1125 (1947).

$\nu(B^{11})/\nu(H^1) = 0.320827$ D. A. Anderson, Phys. Rev. 76, 434 (1949).

LIST OF JOURNALS SURVEYED FOR NSA 6, NOS. 1 THROUGH 23

(all numbers are inclusive)

Acta Phys. Austriaca 3 (1949); 4 (1950); 5 (1951); 6, No. 1 (1952).
Acta Phys. Polon. 9 (1947-1948); 10 (1950-1951).
Annales real soc. expañ. fis y quim. 46 (1950); 47 (1951); 48, Nos. 1-8 (1952).
Ann. Phys. 6, July-Dec. (1951); 7, Jan.-April (1952).
Ann. Physik 9, Nos. 5-8 (1951); 10, 1-8 (1952).
Arkiv Fysik 3, Nos. 2-6 (1951); 4, 1-3 (1952).
Australian J. Sci. Res. 4, Nos. 3-4 (1951); 5, 1-2 (1952).
Can. J. Chem. 29, Nos. 7-12 (1951); 30, 1-10 (1952).
Can. J. Phys. 29, Nos. 4-6 (1951); 30, 1-4 (1952).
Chem. Abst. 45, Nos. 1-22 (1951); 46, 1-20 (1952).
Chem. Zentralblatt 123, Nos. 1-41 (1952).
Compt. rend. 233 (1951); 234, 235, Nos. 1-14 (1952).
Doklady Akad. Nauk USSR 71-75 (1950); 76-81 (1951); 82, 83, Nos. 1-3 (1952).
Experientia 6, Nos. 7-12 (1950); 7, 1-12 (1951); 8, 1-10 (1952).
Guide Russ. Sci. Period. Lit. 4, Nos. 7-12 (1951); 5, 1-3 (1952).
Helv. Phys. Acta 24, Nos. 4-6 (1951); 25, 1-4 (1952).
Indian J. Phys. 25, Nos. 3-12 (1951); 26, 1-6 (1952).
Izvest. Akad. Nauk USSR Ser. Fiz. 14, Nos. 1-6 (1950).
J. Am. Chem. Soc. 73, Nos. 7-12 (1951); 74, 1-19 (1952).
J. Chem. Phys. 19, Nos. 7-12 (1951); 20, 1-10 (1952).
J. de Chim. Phys. 48, Nos. 7-12 (1951); 49, 1-10 (1952).
J. Franklin Inst. 253, Nos. 1-6 (1952); 254, 1-4 (1952).
J. Phys. Soc., Japan 6, Nos. 2-6 (1951); 7, 1-5 (1952).
J. phys. radium 12, Nos. 7-12 (1951); 13, 1-4 (1952).
J. Research Nat. Bur. Standards 47 (1951); 48 (1952); 49, Nos. 1-4 (1952).
Kgl. Danske Videnskab Selskab Mat-fys. Medd 27, Nos. 1-6 (1952).
Mem. Coll. Sci. Kyoto Imp. Univ. 25, Nos. 1-4 (1949); 26, 1-2 (1950).
Nach. Akad. Wiss. Göttingen Math-physik Klasse Nos. 1-7 (1951); 1-7 (1952).
Nature 168 (1951); 169 (1952); 170, Nos. 4314-4325 (1952).
Naturwiss. 38, Nos. 13-24 (1951); 39, 1-15 (1952).
Nuclear Sci. Abst. 5, Nos. 13-23 (1951); 6, 1-18 (1952).
Nuovo Cim. 8, Nos. 7-12 (1951); 9, 1-10 (1952).
Phil. Mag. 42, Nos. 330-335 (1951); 43, 336-342 (1952).
Phys. Abst. 54, Nos. 643-648 (1951); 55, 649-657 (1952).
Physica 17, Nos. 7-12 (1951); 18, 1-7 (1952).
Phys. Rev. 83-84 (1951); 85-87 (1952).
Proc. Camb. Phil. Soc. 47, Nos. 3-4 (1951); 48, 1-4 (1952).
Proc. Nat. Inst. Sci., India 17, Nos. 1-6 (1951); 18, 1-4 (1952).
Proc. Phys. Soc., (London) A64, Nos. 379-384 (1951); A65, 385-391 (1952).
Proc. Roy. Soc., (London) 207A-210A (1951); 211A-214A (1952).
Zhur. Eksptl' i Teoret. Fiz. 21, Nos. 1-12 (1951); 22, 1 (1952).
Z. Naturforsch. 6a, Nos. 7-12 (1951); 7a, 1-8 (1952).
Z. Phys. 129 (1951); 130, (1951); 131 (1952); 132, Nos. 1-3 (1952).

$_0n_1^1$	τ 13^m β^- 0.782 sl $p\beta^-$ coincidences		J. M. Robson, Phys. Rev. 83, 349(1951). F-K plot linear.
$_0n_2^2$	He^6 not produced by pile irradiation of He		A. J. Ferguson, J. H. Montague, Phys. Rev. 87, 215A(1952).
$_0n_4^4$	Not found from Rh or Bi (18 Mev n)		K.-H. Sun et al., Phys. Rev. 85, 942 (1952).
H	σ_t(10.0 ev) (lucite) 20.09 (polystyrene) 20.49		C. T. Hibdon, ANL-4602 (March 1951).
	σ_t(14 Mev) 0.68		L. S. Goodman, ANL-4602 (Mar. 1951).
	σ_t(14.1 Mev) 0.689		H. L. Poss et al., Phys. Rev. 87, 11 (1952); 85, 703A (1952).
	σ_t(14.2 Mev) 0.68		D. I. Meyer and W. Nyer, LA-1279 (July 1951).
	σ_t(156 Mev) 0.046		A. E. Taylor et al., Phil. Mag. 42, 751(1951).
$_1H_0^1$	μ 1.52101 ± 0.00002 $\times 10^{-3}$(eh/4πmc)		J. H. Gardner, Phys. Rev. 83, 996(1951). Diamag. corr.
$_1H_1^2$	μ 0.857606 M		P. J. Bray et al., Phys. Rev. 87, 229A (1952).
	μ 0.857615* I 0.857611** *ν(D)/ν(H) = 0.15350733 ±0.00000007 **ν(D)/ν(H) = 0.15350669 ±0.00000012		G. Lindström, Arkiv Fysik 4, 1(1951). *D_2O; paraffin oil **D_2O; H_2O.
	μ 0.857608 I ν(D)/ν(H) = 0.15350612 ±0.00000005		B. Smaller et al., Phys. Rev. 83, 812 (1951). [D_2;H_2].
	q (2.738 ± 0.014) $\times 10^{-3}$ M		H. G. Kolsky et al., Phys. Rev. 87, 395 (1952); 83, 1061 (1951).
	σ_t(0.264 – 3.0 Mev) n(θ) studied		M. Walt et al., Phys. Rev. 87, 238A(1952).
	σ_t(14.1 Mev) 0.80		H. L. Poss et al., Phys. Rev. 87, 11 (1952).
	σ_t(14.2 Mev) 0.81		D. I. Meyer and W. Nyer, LA-1279 (July 1951).
	σ_t(156 Mev) 0.0707		A. E. Taylor et al., Phil. Mag. 42, 751(1951).
	σ(th n,γ)H^3 0.57 mb		L. Kaplan et al., Phys. Rev. 87, 785(1952).
$_1H_2^3$	τ 12.4^y		W. M. Jones, Phys. Rev. 83, 537(1951).
	β^- 0.0194 ± 0.0004 Neutrino mass ≤250 ev		D. R. Hamilton et al. Phys. Rev. 83, 215A (1951).
	Spectral shape analyzed neutrino mass <5 kev		O. Kofoed-Hansen, Phil. Mag. 42, 1448 (1951).
	β^- intensity below 1 kev less than expected		G. M. Insch, S. C. Curran, Phil. Mag. 42, 892(1951).
$_1H_3^4$	No β's after H^3(3.8 Mev d) Yield H^3(d,n)/He^3(d,p) >1500 E_d = 0.5 to 3.8		K. G. McNeill and W. Rall, Phys. Rev. 83, 1244(1951).
He	σ_s coh 1.1		A. W. McReynolds, Phys. Rev. 84, 969 (1951). Assuming σ_s coh(O) = 4.2
	σ_s(th n) 0.78		C. T. Hibdon, C. O. Muehlhause, ANL-4680 (Sept. 1951).
	σ_{el}(90 Mev) 0.11		P. Tannenwald, Phys. Rev. 87, 205A(1952).
$_2He_2^4$	No large resonance in H^3(p,γ) for E_p < 3.4 scin		C. E. Falk, G. C. Phillips, Phys. Rev. 83, 468(1951).
	γ 20.4 ± 0.2 s	H^3(p,γ)	R. S. Rochlin, Phys. Rev. 84, 165(1951).
$_2He_3^5$	n$\alpha(\theta)$ $p_{3/2} - p_{1/2}$ split by ~5 Mev	He^4(n,n)	R. K. Adair, Phys. Rev. 86, 155(1952).
$_2He_4^6$	τ 0.86 ± 0.03^s		R. K. Sheline, Phys. Rev. 87, 557(1952). Li^7(≤50 Mev γ,p).
	β^- 3.50 s		C. S. Wu et al., Phys. Rev. 87, 1140(1952). Be(n,α).
	Level 1.71	Li^7(t,α)	J. T. Dewan et al., Phys. Rev. 86, 416 (1952).
Li	σ_a(th n) 67 osc		J. Ailloud et al., J. phys. radium 13, 171(1952).
	σ_t(0.15 – 0.40 Mev) graph		P. H. Stelson, W. M. Preston, Phys. Rev. 84, 162(1951).
	σ_t(1.3 – 3.4 Mev) graph		C. K. Bockelman et al., Phys. Rev. 84, 69(1951).
$_3Li_1^4$	No activity observed with $0.025^s < \tau < 1^m$ from Li(≤50 Mev γ)		R. K. Sheline, Phys. Rev. 87, 557(1952).
$_3Li_2^5$	I(ground) = $p_{3/2}$ I(2.5 level) = $p_{1/2}$	He^4(p,p)He^4	M. Heusinkveld, G. Freier, Phys. Rev. 85, 80(1952).

$_3Li_2^5$	Resonance E_o 0.400	$He^3(d,p)He^4$	A. B. Lillie et al., Phys. Rev. 86, 630A (1952).
	p's from $Li^6(d,t)Li^5(p)He^4$ consistent with Q = 1.8 for $Li^5(p)He^4$		R. W. Gelinas, S. S. Hanna, Phys. Rev. 86, 253(1952).
$_3Li_2^6$	Level 2.187	$Be(p,\alpha)$ EA	C. P. Browne et al., Phys. Rev. 83, 179 (1951).
	Level 2.12	$Li^6(p,p)$ sr	W. M. Harris, Phys. Rev. 84, 1249(1951).
	Levels 2.18	$Li^6(p,p)$ $Li^7(p,d)$	W. Franzen, J. G. Likely, Phys. Rev. 87, 667(1952); 87, 205A(1952).
	3.7	$Li^7(p,d)$ scin E_p = 18.3	
	Level 3.58	$Be^9(p,\alpha\gamma)$	R. B. Day, R. L. Walker, Phys. Rev. 85, 582(1952).
	No other γ	$\alpha\gamma$ scin	
	σ(2.49 Mev n,α) 0.188	pc	F. L. Ribe, Phys. Rev. 87, 205A(1952).
	σ(14.2 Mev n,α) 0.026		
	σ(14.2 Mev n,d) 0.014		
$_3Li_4^7$	μ 3.2569	I	T. Kanda et al., Phys. Rev. 85, 938(1952).
	μ 3.2568 $\nu(Li)/\nu(H)$ = 0.3886341 ± 0.0000010	I	G. Lindström, Arkiv Fysik 4, 1(1951). [$LiNO_3$].
	Level 0.478	Li(p,p) Li(d,d)	R. M. Williamson et al., Phys. Rev. 84, 731 (1951).
	Level 0.48	Li(d,d)	F. B. Shull, Phys. Rev. 83, 875A(1951).
	d,p(θ) I(0.477 level) = ½	$Li^6(d,p)$ ppl	D. N. Dunbar, F. Hirst, Phys. Rev. 83, 164(1951).
	d,$\gamma(\theta)$ and d,p$\gamma(\theta)$ = constant I(0.477 level) = ½	$Li^6(d,p\gamma)$ scin E_d = 0.6 – 0.9	C. M. Class, S. S. Hanna, Phys. Rev. 87, 247(1952); Nature 168, 429(1951).
	p$\gamma(\theta)$ indicates I = ½ for 0.477 level	$Li^6(d,p\gamma)$	J. O. Newton, Proc. Phys. Soc. (London) 64A, 938(1951).
	d,p$\gamma(\theta)$ = constant I(0.477 level) = ½	$Li^6(d,p\gamma)$ scin E_d = 0.5	W. H. Burke, J. R. Risser, Phys. Rev. 87, 294(1952); 85, 741A(1952).
	p$\gamma(\theta)$ = constant	$Li^6(d,p\gamma)Li^7$ E_d = 1.0	G. C. Phillips et al., Phys. Rev. 85, 742A(1952).
	Levels 4.56 broad 6.56	$Li^7(p,p)$ scin E_p = 18.3	W. Franzen, J. G. Likely, Phys. Rev. 87, 667(1952); 87, 205A(1952).
$_3Li_4^7$	Level 4.61	$Li^6(d,p)$	R. W. Gelinas, S. S. Hanna, Phys. Rev. 86, 253(1952).
	Level 4.59	$Be^9(d,\alpha)$	A. Ashmore, J. F. Raffle, Proc. Phys. Soc. (London) A65, 296(1952).
	Li^7(4.65 level) → α + t	$Be^9(d,\alpha)$ ppl	P. Cüer, J. Jung, Compt. rend. 234, 204(1952).
	Level 4.62	$Be^9(d,\alpha)$	R. W. Gelinas et al., Phys. Rev. 83, 1260(1951).
	No 4.8 γ	$Li(p,p\gamma)$ scin	H. E. Gove, Phys. Rev. 84, 1059(1951).
	$\sigma[B^{10}(n,\alpha)Li^7]$ / $\sigma[B^{10}(n,\alpha)$0.477 level $Li^7]$ graph for E_n = 0 – 4		H. Bichsel et al., Helv. Phys. Acta 25, 119(1952).
$_3Li_5^8$	τ	0.85 ± 0.02^S	R. K. Sheline, Phys. Rev. 87, 557(1952). Be(≤50 Mev γ); B(≤50 Mev γ).
	τ	0.825^S scin	W. Rall and K. G. McNeill, Phys. Rev. 83, 1244(1951). Li(4 Mev d,p)
	β^- ~2% to 4.8 level of Be^8?	<13 $a\beta\gamma$	G. Vendryes, Compt. rend. 233, 391(1951).
	Level 2.2 Γ = 0.040	$Li^7(n,n)$ J = 3	P. H. Stelson and W. M. Preston, Phys. Rev. 84, 162(1951).
$_3Li_6^9$	τ	0.170^S	R. B. Holt et al., Phys. Rev. 87, 378 (1952). C^{12}(47.5 Mev p).
	τ Delayed n's	0.168^S	W. L. Gardner et al., Phys. Rev. 83, 1054(1951). Be(19 Mev d,2p) and B,C,N(d and p).
	τ β^-	0.19 ± 0.05^S	R. K. Sheline, Phys. Rev. 87, 557(1952). B(≤50 Mev γ).
Be	σ_t(1.3 – 3.4 Mev)	graph	C. K. Bockelman et al., Phys. Rev. 84, 69(1951).
	σ_t(1.9 – 3.8 Mev) Broad maximum at 2.75	graph	R. Ricamo, W. Zünti, Helv. Phys. Acta 24, 419(1951).
	σ_t(156 Mev)	0.26	A. E. Taylor et al., Phil. Mag. 42, 751(1951).
$_4Be_3^7$	Level 0.430	$B^{10}(p,\alpha)$ EA E_p = 3.3	D. S. Craig et al., Phys. Rev. 87, 206A (1952).
	Level 0.432	$B^{10}(p,\alpha\gamma)$ scin	R. B. Day, T. Huus, Phys. Rev. 85, 761A (1952).
	No other γ with E_γ<1.0		

$_4Be_3^7$	d,n(θ)	Li^6(d,n)	F. Ajzenberg, Phys. Rev. 87, 205A(1952).
	g.s. and 0.430 level have odd parity	ppl E_d = 3.5	
	K(0.479 level)/ K(ground) = 0.123 from data of 49T6		J. M. Dickson and T. C. Randle, Proc. Phys. Soc. (London) 64A, 902(1951).
		Li^6(p,p and p,α)	S. Bashkin, H. T. Richards, Phys. Rev. 84, 1124(1951).
	Levels: ~6.4 (large, ≤3/2+); 7.16 (0.43, 5/2−)		
	No $\gamma\gamma$	scin	F. R. Metzger, Phys. Rev. 85, 727A(1952).
	Maximum energy of Li^7 recoils = 56 ev	EA	R. Davis, Jr., Phys. Rev. 86, 976(1952).
$_4Be_4^8$	τ $<5\times10^{-14}$s		J. J. Wilkins and F. K. Goward, Proc. Phys. Soc. (London) A64, 849(1951).
	$O^{16}(\gamma,4\alpha)$ stars		
		Be^9(d,t)	P. Cüer, J. Jung, Compt. rend. 234, 204(1952).
	σ(2.9 level)/σ(ground) = 2.3 E_d = 1.0	ppl	
	Level (broad) ~5.8?	$B^{10}(\gamma,d)Be^8 - 2\alpha$ ppl	M. J. Brinkworth, E. W. Titterton, Phil. Mag. 42, 952(1951).
	Pair emitting level ~7		G. C. Phillips et al., Phys. Rev. 83, 1049(1951). B^{11}(7.9 p,α)
	Level 16.9	$C^{12}(\gamma,3\alpha)$ ppl	J. J. Wilkins, F. K. Goward, Proc. Phys. Soc. (London) 64A, 1056 (1951).
	Level 18.90?	Li^7(p,n)Be^7	T. W. Bonner and J. W. Butler, Phys. Rev. 83, 1091(1951).
	Resonance: Level ~21.5, E_0 ~4.9, Γ ~0.4	Li^7(p,n)Be^7	J. K. Bair et al., Phys. Rev. 85, 946 (1952).
	Levels 22.58, 23.68	Li^6(d,n)Be^7 pc	L. M. Baggett, S. J. Bame, Jr., Phys. Rev. 85, 741A(1952).
		Li^7(p,p)	S. Bashkin, H. T. Richards, Phys. Rev. 84, 1124(1951).
	Resonances: 1.05, 1.88, 2.06		
		Li(p,n)5^4Be	J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951).
	Resonances: 2.2, 4.5		
	d,$\alpha(\theta)$ found for E_d = 0.2 – 1	Li^6(d,α) ppl	D. N. Dunbar, F. Hirst, Phys. Rev. 83, 164(1951).
		Li^7(p,γ)	H. Nabholz et al., Helv. Phys. Acta 25, 153(1952).
	Resonant γ's isotropic, non-resonant anisotropic		
$_4Be_5^9$	I $\frac{3}{2}$	I	J. Hatton et al., Phys. Rev. 83, 672 (1951).
	q ~0.02?		
			$[Be_3Al_2Si_6O_{18}]$.
	d,n(θ) I(ground) = (3/2)-	Be^9(d,n)	L. Schecter, Phys. Rev. 83, 695(1951).
	Level 2.433	Be^9(p,p) EA	C. P. Browne et al., Phys. Rev. 83, 179 (1951).
	Level 2.44*	Be^9(p,p) scin E_p = 8	J. S. Arthur et al., Phys. Rev. 87, 237A (1952); *verbal report.
	Level 2.57	Be^9(p,p) a E_p = 7.4	D. B. Cowie et al., Phys. Rev. 87, 304 (1952); 85, 742A (1952).
	Level 2.63	$Be^9(\alpha,\alpha)$ a Al	W. O. McMinn et al., Phys. Rev. 84, 963 (1951).
	Levels 17.22, 17.45, 17.80, 18.3	Li^7(d,n)Be^8; Li^7(d,p)Li^8 pc	L. M. Baggett, S. J. Bame, Jr., Phys. Rev. 85, 741A(1952).
		Li^6(t,p)Li^8	C. D. Moak et al., Phys. Rev. 85, 928 (1952).
	Li^8 identified	E_t = 0.35	
$_4Be_6^{10}$	β^- 0.555	s	L. Feldman, C. S. Wu, Phys. Rev. 87, 1091(1952).
	C_2T, C_2A, C_3T, C_3V fit spectral shape		
	Level 3.34	Be^9(d,p) ppl	A. J. Salmon, Proc. Phys. Soc. (London) A64, 848(1951).
	d,p(θ) I(0.0 and 3.37 levels) = 0, 1, 2, or 3 (+)	Be^9(d,p)	F. A. El-Bedewi, Proc. Phys. Soc. (London) A65, 64(1952).
	d,p(θ)	Be^9(d,p)	C. F. Black, Phys. Rev. 87, 205A(1952).
	d,p$\gamma(\theta)$ I(3.77 level) = 2	Be^9(d,pγ) scin E_d = 0.9	L. Cohen et al., Phys. Rev. 87, 206A(1952).
B	σ_a(th n) 730	osc	H. Pomerance, Phys. Rev. 83, 641(1951).
	σ_t(0.9 – 3.4 Mev) graph		C. K. Bockelman et al., Phys. Rev. 84, 69(1951) See also B^{12}.
$_5B_3^8$	τ 0.61 ± 0.11^s β^+		R. K. Sheline, Phys. Rev. 87, 557(1952). B(≤50 Mev γ); C(≤50 Mev γ)
$_5B_4^9$	τ $>3\times10^{-10}$s n spread	Be^9(p,n)	P. H. Stelson, W. M. Preston, Phys. Rev. 83, 469(1951).
	No levels for E_p = 2 – 5.3	Be(p,n)	T. M. Hahn et al., Phys. Rev. 85, 934 (1952).

$_5B_5^{10}$	d,n(θ) Be^9(d,n) ppl First 4 states have even parity $E_d = 3.5$		F. Ajzenberg, Phys. Rev. 87, 205A(1952).
	d,n(θ) Be^9(d,n) ppl g.s. and first 4 excited states have even parity		J. S. Pruitt et al., Phys. Rev. 87, 534 (1952).
	Level C^{12}(d,α) 0.71 s		A. Ashmore, J. F. Raffle, Proc. Phys. Soc. (London) 64A, 754 (1951).
	Level B^{10}(p,p) 0.719 EA $E_p = 2.2$		D. S. Craig et al., Phys. Rev. 87, 206A (1952).
	Level B(p,pγ) 0.718 scin		R. B. Day, T. Huus, Phys. Rev. 85, 761A (1952).
	Levels B^{10}(p,p) 0.71 3.58 sπ 1.74 4.76 $E_p = 7$ 2.15		W. W. Buechner et al., Phys. Rev. 87, 237A (1952).
	Level B^{10}(p,p) 2.34 a $E_p = 7.4$		D. B. Cowie et al., Phys. Rev. 87, 304 (1952); 85, 742A (1952).
	Resonances Be^9(p,γ) E_0 Γ Level 0.336 0.175 6.79 EA 0.492 0.110 6.93		S. E. Hunt, Phys. Rev. 87, 902(1952).
	Be^9(p,$\alpha\gamma$)Li^6 Resonance σ_0 Γ(kev) 2.565 0.11 39		R. B. Day, R. L. Walker, Phys. Rev. 85, 582(1952).
	Resonances Be^9(p,n)B^9; Be^9(p,γ)B^{10} E_0 Γ 2.57 4.72 ~0.5		T. M. Hahn et al., Phys. Rev. 85, 934 (1952).
	Levels Be(d,n) 5.110, 5.163, 5.924		T. W. Bonner and J. W. Butler, Phys. Rev. 83, 1091(1951).
	No 1.73 γ Be^9(d,n) sl;pe$^-$		D. E. Alburger, Phys. Rev. 83, 184(1951).
	n yield Be^9(d,n) increase at $E_d = 0.91$, 2.3? $E_d = 0 - 3.5$.		E. B. Tucker, Phys. Rev. 83, 473(1951).
	σ_t(0 – 3.4 Mev) graph Maxima: 1.8, 2.8		C. K. Bockelman et al., Phys. Rev. 84, 69(1951).
	$\sigma_{(n,\alpha)}$ $E_n = 0.3$ to 2.5 graphs		B. Petree et al., Phys. Rev. 83, 1148(1951).
$_5B_6^{11}$	μ 2.6887 I ν(B)/ν(H) = 0.3208381 ± 0.0000008		G. Lindström, Arkiv Fysik 4, 1(1951). [$Na_2B_2O_4$] and [$K_2B_2O_4$].
	Level Be^9(α,d) 2.18 a Al		W. O. McMinn et al., Phys. Rev. 84, 963 (1951).
$_5B_6^{11}$	Level B^{11}(p,p) 2.06 a		D. B. Cowie et al., Phys. Rev. 87, 304 (1952); 85, 742A (1952).
	Levels B^{10}(d,p) 4.50, 6.4* 6.7, 8.88 pair s		J. G. Rutherglen et al., Proc. Phys. Soc. (London) 64A, 906(1951). *In C^{11}?
	Levels N^{14}(n,α) 2.1 6.7 8.5 cc 4.4 7.3 8.9 5.0 8.0 11.8 $E_n = 14.1$		A. B. Lillie, Phys. Rev. 87, 716(1952).
	γ's B^{10}(d,p) 4.5, 6.7, 9.0 pair s		J. Terrell, G. C. Phillips, Phys. Rev. 83, 703(1951).
	γ's B^{10}(d,p) 4.43 7.34 6.75 8.93 pair s		S. J. Bame, L. M. Baggett, Phys. Rev. 84, 891(1951). E_d = 1.4.
	Levels B^{10}(d,p) pγ coincidences rates		H. H. Landon, Phys. Rev. 83, 1081(1951).
	B^{10}(d,pγ)B^{11} p$\gamma(\theta)$ = constant $E_d = 1.8$		G. C. Phillips et al., Phys. Rev. 85, 742A(1952).
	d,p(θ) Be^9(d,p) $E_d = 1.0 - 2.2$		F. L. Canavan, Phys. Rev. 87, 136(1952).
$_5B_7^{12}$	τ 0.027^s		J. E. Brolley, Jr., et al., Phys. Rev. 83, 990(1951).
	β^- 4% ~9.1 a$\beta\gamma$		G. Vendryes, Compt. rend. 233, 391(1951).
	Levels Be^9(α,p) 0.95, 1.65, 3.82 a Al		W. O. McMinn et al., Phys. Rev. 84, 963 (1951).
	B^{11}(n,γ) Levels Γ(kev) J 4.46 130 3 4.92 65 1 5.53 120 2 5.63 60 3		C. K. Bockelman et al., Phys. Rev. 84, 69(1951).
C	σ_t(1.3 – 3.4 Mev) graph		C. K. Bockelman et al., Phys. Rev. 84, 69(1951).
	σ_t(1.9 – 3.8 Mev) graph E_0 σ_0 Γ 2.09 2.4 ~0.04 2.95 2.6 ~0.14		R. Ricamo, W. Zünti, Helv. Phys. Acta 24, 419(1951).
	σ_t(14 Mev) 1.14		L. S. Goodman, ANL-4602 (Mar. 1951).
	σ_t(14.2 Mev) 1.29		D. I. Meyer and W. Nyer, LA-1279 (July 1951).
	σ_t(14.1 Mev) 1.279		H. L. Poss et al., Phys. Rev. 87, 11 (1952); 85, 703A (1952).
	σ_t(156 Mev) 0.330		A. E. Taylor et al., Phil. Mag. 42, 751(1951).

C	σ_t(400 Mev) 0.288		V. A. Nedzel, J. Marshall, Phys. Rev. 86, 604A(1952).
$_6C^{10}_4$	γ 100% 0.720 scin 2.1% 1.045		R. Sherr, J. Gerhart, Phys. Rev. 86, 619A (1952). $B^{10}(p,n)$
$_6C^{11}_5$	τ 20.0^m		J. M. Dickson and T. C. Randle, Proc. Phys. Soc. (London) 64A, 902(1951).
	Levels $B^{10}(d,n)C^{11}$ 1.85 7.39 4.23 8.08 4.77 8.39 6.40 8.62 6.77 ppl		V. R. Johnson, Phys. Rev. 86, 302(1952).
	Resonance $B^{10}(p,\alpha\gamma)$ 1.52		R. B. Day, T. Huus, Phys. Rev. 85, 761A (1952).
$_6C^{12}_6$	Level Be(α,n) γ 4.45 scin		S. A. E. Johansson, Phil. Mag. 43, 249 (1952).
	$Be^9(\alpha,n\gamma)$ γ 4.47 ± 0.04 sl pair		D. E. Alburger, Phys. Rev. 87, 194A(1952).
	γ B^{11}(d,n) 4.5 pair s		J. Terrell, G. C. Phillips, Phys. Rev. 83, 703(1951).
	γ 4.37 Be(α,n) ~2.5γ/4.4γ<0.3 ~7γ/4.4γ<0.002 pair s		K. P. Artemov, N. A. Viasov, Doklady Akad. Nauk S.S.S.R. 77, 225 (1951) in Guide to Russ. Sci. Per. Lit. 4, 235(1951).
	Level B^{11}(d,n) 4.44 pair s		J. G. Rutherglen et al., Proc. Phys. Soc. (London) 64A, 906(1951).
	Level C^{12}(p,p) 4.44* scin E_p = 8		J. S. Arthur et al., Phys. Rev. 87, 237A (1952); *verbal report.
	Level C^{12}(p,p) 4.59 a E_p = 7.4		D. B. Cowie et al., Phys. Rev. 87, 304 (1952); 85, 742A (1952).
	Level C^{12}(p,p) 4.45 scin E_p = 7.3		H. F. Stoddart, H. E. Gove, Phys. Rev. 87, 238A(1952); 87, 262 (1952).
	Level N^{15}(p,α) 4.432 ± 0.010		A. Schardt et al., Phys. Rev. 86, 527 (1952).
	Level* $Be^9(\alpha,n)$ ~7 cc *pair emitting		G. Harris, W. T. Davies, Proc. Phys. Soc. (London) A65, 564(1952).
$_6C^{12}_6$	Levels B^{11}(d,n) 9.6 12.76 10.8 15.09 11.1 16.07 11.74 ppl		V. R. Johnson, Phys. Rev. 86, 302(1952).
	p,$\gamma\gamma(\phi)$ $B^{11}(p,\gamma)$ I(4.4 level) = 2 I(16.4 level) = 2		G. M. Lewis, Phil. Mag. 43, 690(1952).
	(11.8γ)(4.5γ)(θ) $B^{11}(p,\gamma)$ I(4.5 level) = 2 scin γ's are M1, E2 E_p = 0.17		T. P. Hubbard, Jr., et al., Phys. Rev. 87, 378(1952).
	Resonances $B(p,\gamma)$ E_0 Γ E_γ 0.162 4.45, 11.6 0.67 0.31 4.44, 12.0, 16.4 1.37 1.15 4.45, 12.7, 16.9 scin		T. Huus, R. B. Day, Phys. Rev. 85, 761A(1952).
	$B^{11}(p,n)20.4^mC$ Resonances: 3.7, 5.2, 5.9, 6.4		J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951).
	Resonances $B^{11}(p,n)$ 3.17 4.14* 3.75 4.67 $E_p \leq 5.5$		H. B. Willard et al., Phys. Rev. 86, 629A (1952); 87, 206A (1952). *Double.
	Resonance $B^{11}(p,\gamma)$ E_0 Γ scin 0.670 0.39		L. W. Cochran et al., Phys. Rev. 87, 672 (1952).
	n yield B^{11}(d,n) increase at $E_d \approx 1.3$ E_d = 0 – 3.5.		E. B. Tucker, Phys. Rev. 83, 473(1951).
	$C^{12}(\gamma,3\alpha)$ E_0 ~ 27 ppl		J. J. Wilkins, F. K. Goward, Proc. Phys. Soc. (London) 64A, 1056 (1951).
	$C^{12}(\gamma,3\alpha)$ Be^8 intermediate?		R. Chastel, Compt. rend. 233, 1440(1951).
	$\alpha(\theta)$ N^{14}(d,α) for 0 and 4.4 levels		W. M. Gibson, E. E. Thomas, Proc. Roy. Soc. (London) 210A, 543(1952).
	$\sigma[C^{12}$(27 Mev n,2n)$20^mC]$ ~0.01		J. E. Brolley, Jr., et al., Phys. Rev. 87, 206A(1952).
$_6C^{13}_7$	Level C^{12}(d,p) 3.05 pair s		L. M. Baggett and S. J. Bame, Jr., Phys. Rev. 84, 154(1951).
	Levels C^{12}(d,p) 3.683 ½ or 3/2,– 3.884 3/2 or 5/2,+		J. Rotblat, Phys. Rev. 83, 1271(1951). d,n(θ) ppl. E_d = 8.
	Levels O^{16}(n,α) 3.0 single 3.7 cc E_n = 14.1		A. B. Lillie, Phys. Rev. 87, 716(1952).
	Levels C^{13}(p,p) 3.14 a 4.03 E_p = 7.4		D. B. Cowie et al., Phys. Rev. 87, 304 (1952).

$_6C^{13}_7$	d,p(θ) C^{12}(d,p) I(ground) = $p_{3/2}$, $p_{1/2}$ I(3.1 Mev level) = $s_{1/2}$ I(3.9 Mev level) = $d_{5/2}$, $d_{3/2}$ E_d = 14.5		C. F. Black, Phys. Rev. 87, 205A(1952).
	n(θ) C^{12}(n,n) Level J 8.20 $d_{3/2}$		R. Ricamo, Nuovo cimento 8, 893(1951).
	Levels C^{12}(d,p) 3.09 6.92 8.03 ppl 3.88 7.25 8.14 5.23 7.58 8.35 5.42 7.75 8.55 5.77 7.87 8.75 6.36 E_d = 7.86		J. Catalá, F. S. Perez, Anales real soc. españ. fis. y quim. 47A, 225 (1951). J. Catalá et al., ibid 48A, 73 (1952).
	C^{12}(n,γ) Levels Γ(kev) J 6.80 ≤11 ≥½ 7.60 120 ½		C. K. Bockelman et al., Phys. Rev. 84, 69 (1951).
	σ_s coh 4.5 (+) σ_s bound 5.5		W. C. Koehler, E. O. Wollan, Phys. Rev. 85, 491(1952).
	Q's $B^{10}(\alpha,p)$ 0.63, 0.00 −0.55, −1.75 ppl		H. Slätis et al., Arkiv för Fysik 3, 315(1952); Phys. Rev. 81, 641(1951).
$_6C^{14}_8$	~No β^- with E <8 kev cc		G. W. McManaway et al., Phys. Rev. 87, 176A(1952).
	$\bar{E}_\beta/\tau = 2.58 \times 10^{-13}$ Mev/sec calorimeter		G. H. Jenks, F. H. Sweeton, Phys. Rev. 86, 803(1952).
	dp(θ) C^{13}(d,p) Results of this and dn(θ) show C^{14}, N^{14} g.s. have same parity		D. A. Bromley, L. M. Goldman, Phys. Rev. 86, 790(1952).
	Level C^{13}(d,p) 6.10 pair s		L. M. Baggett and S. J. Bame, Jr., Phys. Rev. 84, 154(1951).
$_6C^{15}_9$	γ ~5.5 a coin		E. L. Hudspeth, W. B. Rose, Phys. Rev. 85, 742A(1952). C^{14}(1.8 Mev d,p).
N	σ_s coh 11		A. W. McReynolds, Phys. Rev. 84, 969 (1951). Assuming σ_s coh(O) = 4.2.
	σ_s coh 11.1 (+)		S. W. Peterson, H. A. Levy, Phys. Rev. 87, 462(1952).
	σ_t(0.15 − 1.45 Mev) E_n Γ J 0.640 40-55 kev ½ 1.00 45-60 kev ⅜		C. H. Johnson et al., Phys. Rev. 84, 775 (1951). Other resonances observed at 0.433, 1.12, 1.35, 1.45.
	σ_t(0.2 − 1.8 Mev) graphs		J. J. Hinchey et al., Phys. Rev. 86, 483 (1952).
N	σ_t(14.1 Mev) 1.7		H. L. Poss et al., Phys. Rev. 87, 11 (1952).
	σ_t(14.2 Mev) 1.39		D. I. Meyer and W. Nyer, LA-1279 (July 1951).
$_7N^{13}_6$	d,n(θ) C^{13}(d,n) I(3.53 level)=⅜+, ⅝+ I(2.38 level)=½+ I(ground)=½−, ⅜−		F. A. El-Bedewi et al., Proc. Phys. Soc. (London) 64A, 1055 (1951).
	d,n(θ) C^{13}(d,n) I(ground) = ½− or ⅜−		W. Heckrotte, L. Schecter, Phys. Rev. 83, 894A(1951).
	Resonances C^{13}(p,γ) E_0 = 0.45, 1.700 ± 0.008		J. D. Seagrave, Phys. Rev. 83, 887A(1951); 84, 1219(1951).
	Resonances C^{13}(p,p)C^{13} E_0 Γ(kev) J 0.461 35 $s_{1/2}$ 0.696 60 $p_{1/2}$ 1.748 66 $d_{3/2}$		H. L. Jackson et al., Phys. Rev. 87, 237A (1952); verbal report.
$_7N^{14}_7$	dn(θ) C^{13}(d,n) Results of this and dp(θ) show N^{14}, C^{14} g.s. have same parity		D. A. Bromley, L. M. Goldman, Phys. Rev. 86, 790(1952).
	O^{16}(d,α) α's to 2.3 Mev level <2% of α's to g.s. None observed		R. J. Van de Graaff et al., Phys. Rev. 86, 966(1952).
	Levels N^{14}(p,p) 2.35 a 3.95 E_p = 7.4		D. B. Cowie et al., Phys. Rev. 87, 304 (1952); 85, 742A (1952).
	Levels N^{14}(p,p) 2.33 scin 3.96 E_p = 8 5.10* No level at 3.80*		J. S. Arthur et al., Phys. Rev. 87, 237A (1952); *verbal report.
	Levels C^{13}(d,n) 3.40 pair s 5.04		L. M. Baggett and S. J. Bame, Jr., Phys. Rev. 84, 154(1951).
	Levels O^{18}(d,α) 3.95, 5.01, 5.70 s		A. Ashmore, J. F. Raffle, Proc. Phys. Soc., (London) 64A, 754 (1951).
	Levels O^{18}(d,α) 3.98, 5.06 ppl		H. B. Burrows et al., Proc. Roy. Soc. (London) 209A, 478 (1951).
	C^{13}(p,γ) Levels Γ(kev) 8.05 32.5 8.62 6 8.70 500 9.18 2.1 9.49 45		J. D. Seagrave, Phys. Rev. 85, 197(1952).

$_7N_7^{14}$	Resonance $C^{12}(d,n)N^{13}$ E_0 Γ(kev) 1.435 ~6 $C^{13}(p,n)10.1^mN$ Resonances: 4.0, 5.0, 6.2	K. Famularo et al., Phys. Rev. 85, 742A (1952). J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951).
	σ(2 Mev n,p) = 0.07 (3.6 Mev n,p) = 0.15 σ(2 Mev n,α) = 0.01 (3.6 Mev n,α) = 0.02	W. Bollmann, W. Zünti, Helv. Phys. Acta 24, 517(1951).
	σ(14.1 Mev n,x) $\Sigma\sigma$ for p, d, and t 0.100 σ(14.1 Mev n,2α)Li^7 0.015 Values based on σ_s(H) = 0.675	A. B. Lillie, Phys. Rev. 87, 716(1952).
$_7N_8^{15}$	p(θ) ppl N(d,p) Level I ground $\frac{1}{2}-, \frac{3}{2}-, \frac{5}{2}-$ 6.33 $\frac{3}{2}-, \frac{5}{2}-$? 8.32 $\frac{1}{2}+, \frac{3}{2}+$ 9.22 $\frac{1}{2}+, \frac{3}{2}+$	W. M. Gibson, E. E. Thomas, Proc. Roy. Soc. (London) 210A, 543(1952). E_d = 7.89.
	d(θ) N(d,d)	W. M. Gibson, E. E. Thomas, Proc. Roy. Soc. (London) 210A, 543(1952).
	γ's N^{14}(d,p) 4.4, 5.3, 6.4, 7.4, 8.5 pair s	J. Terrell, G. C. Phillips, Phys. Rev. 83, 703(1951).
	Levels C^{14}(p,n)N^{14} 11.29, 11.43, 11.76, 11.88, 11.96, 12.10, 12.15, 12.33, 12.49	W. D. Roseborough et al., Phys. Rev. 83, 1133(1951).
	Resonances N^{14}(n,α)B^{11} 2.26, 2.56, 2.75 N^{14}(n,p)C^{14} 2.26, 2.80	W. Bollmann, W. Zünti, Helv. Phys. Acta 24, 517(1951).
	σ_t(0.2 – 1.8 Mev) graphs E_0 Γ(kev) J 0.430 3.5 > ½ 0.492 7.5 0.639 43 ½+ 0.998 46 ⅜+ 1.120 19 ⅝ 1.188 ≤3.2 > ½ 1.211 13 ½– 1.350 22 ⅝ 1.401 54 ⅜– 1.595 22 ⅝ 1.779 24 ⅝	J. J. Hinchey et al., Phys. Rev. 86, 483 (1952).
	σ[N^{15}(pile n,γ)7.3$^S N^{16}$] 0.08 mb	A. J. Ferguson, J. H. Montague, Phys. Rev. 87, 215A(1952).
$_7N_9^{16}$	Levels O^{16}(n,p) 0.3? 1.7 2.6 cc E_n = 14.1	A. B. Lillie, Phys. Rev. 87, 716(1952).
O	σ_t(1.2 – 3.5 Mev) graph	C. K. Bockelman et al., Phys. Rev. 84, 69(1951).
	σ_t(1.9 – 3.8 Mev) graph E_0 1.9, 3.75 Marked dip at 2.37	R. Ricamo, W. Zünti, Helv. Phys. Acta 24, 419(1951).
	σ_t(14 Mev) 1.49	L. S. Goodman, ANL-4602 (Mar. 1951).
	σ_t(14.1 Mev) 1.64	H. L. Poss et al., Phys. Rev. 87, 11 (1952).
	σ_t(14.2 Mev) 1.61	D. I. Meyer and W. Nyer, LA-1279 (July 1951).
	σ_t(156 Mev) 0.430	A. E. Taylor et al., Phil. Mag. 42, 751(1951).
$_8O_7^{15}$	Capture γ's N(p,γ) 0.75 5.29 1.39 6.21 2.38 6.84 scin	C. H. Johnson et al., Phys. Rev. 85, 931 (1952); 85, 727A (1952).
	Level N^{14}(d,n) 4.9 ppl E_d = 1.7	W. B. Rose et al., Phys. Rev. 87, 382 (1952).
$_8O_8^{16}$	Levels O^{16}(p,p) None <4.6 a E_p = 7.4	D. B. Cowie et al., Phys. Rev. 87, 304 (1952); 85, 742A (1952).
	p,$\gamma(\theta)$ F^{19}(p,α) I(6.1 level) = 3– I(6.9 level) = 2+ I(7.1 level) = 2–	J. E. Sanders, Phil. Mag. 43, 630(1952).
	γ's F^{19}(p,$\alpha\gamma$) 6.19 ± 0.08 sl 7.13 ± 0.12 pair	D. E. Alburger, Phys. Rev. 87, 194(1952).
	γ F^{19}(p,α) 6.13 E3 polarization	A. P. French, J. O. Newton, Phys. Rev. 85, 1041(1952).
	Levels O^{16}(γ,n) 15.60 16.72 15.84 16.96 16.56	R. N. H. Haslam et al., Phys. Rev. 87, 196A (1952).
	Resonances N^{15}(p, . . .) p,α p,$\alpha\gamma$ p,γ 0.338 0.429 1.05 1.05 0.898 1.210 1.05 ? 1.210	A. Schardt et al., Phys. Rev. 86, 527 (1952).
	σ(14.1 Mev n,p) cc 0.035 σ(14.1 Mev n,d) 0.015 σ(14.1 Mev n,α) 0.310 Values based on σ_s(H) = 0.675	A. B. Lillie, Phys. Rev. 87, 716(1952).
$_8O_9^{17}$	I ⅝ Mic	S. L. Miller et al., Phys. Rev. 86, 607A (1952).

$_8O_9^{17}$	p(θ) ppl O(d,p) Level I ground $\frac{5}{2}+,\frac{3}{2}+$ 0.88 $\frac{1}{2}+$	E. J. Burge et al., Proc. Roy. Soc. (London) 210A, 534 (1952). E_d = 7.73.
	Levels $O^{16}(d,p)$ $F^{19}(d,\alpha)$ 0.87 5.31 7.51 3.06 5.76 8.27 3.85 6.24 8.59 ppl 4.58 6.89 9.06 5.07	H. B. Burrows et al., Proc. Roy. Soc. (London) 209A, 478 (1951).
	$O^{16}(n,\gamma)$ Levels Γ(kev) J 5.69 ≤7 ≥½ 5.86 ≤10 ≥½ 5.93 30 ½ 6.36 120 ½	C. K. Bockelman et al., Phys. Rev. 84, 69(1951).
	$\sigma_s(\theta)$ $O^{16}(n,n)$ Level Γ J 5.94 $p_{½}$ 6.36 0.18 $s_{½}$ 7.28 0.22 $d_{½}$ 7.73 0.80 $p_{½}$ 8.29 0.28 $p_{½}$	E. Baldinger et al., Phys. Rev. 84, 1058 (1951); Helv. Phys. Acta 25, 142(1952).
	$O^{16}(d,p\gamma)O^{17}$ $p\gamma(\theta)$ = constant E_d = 1.7, 2.0	G. C. Phillips et al., Phys. Rev. 85, 742A(1952).
F	σ_s(th n) 3.75	C. T. Hibdon, C. O. Muehlhause, ANL-4680 (Sept. 1951).
$_9F_8^{17}$	τ 60 ± 1^S	R. J. Horsley et al., Phys. Rev. 87, 756 (1952).
	No γ	V. Perez-Mendez, P. Lindenfeld, Phys. Rev. 83, 864(1951).
	d,n(θ) O^{18}(d,n) I(0.53 level)=½+ I(ground)=$\frac{3}{2}+,\frac{5}{2}+$	F. A. El-Bedewi et al., Proc. Phys. Soc. (London) 64A, 757 (1951).
	d,n(θ) O^{18}(d,n) I(0.536 level) = ½ ppl	F. Ajzenberg, Phys. Rev. 83, 693 and 875A(1951).
	O^{16}(p,p or γ) Levels J 3.11 $s_{½}$ 3.88 $f_{½}$ 4.36 $d_{½}$ 4.73 $p_{½}$	R. A. Laubenstein et al., Phys. Rev. 84, 12, 18(1951).
$_9F_9^{18}$	β^- 100% 0.649 sl No γ	L. Ruby, J. R. Richardson, Phys. Rev. 83, 698(1951). F^{19}(p,pn).
	Levels Ne^{20}(d,α) 1.05 2.61 4.42 1.83 3.23 5.01 ppl 2.20 3.92 5.61	R. Middleton, C. T. Tai, Proc. Phys. Soc. (London) A64, 801(1951).
$_9F_{10}^{19}$	μ 2.6279 I	G. J. Bene, Helv. Phys. Acta 24, 367 (1951).
	μ 2.6282* I 2.6284** ν(F)/ν(H) = 0.9408545* ± 0.0000030 ν(F)/ν(H) = 0.9409330** ± 0.0000030	G. Lindström, Arkiv Fysik 4, 1(1951). *[$CHFCl_2$], **[$CFCl_3$]. Ratio different for six compounds tested.
	μ 2.62807 I	T. Kanda et al., Phys. Rev. 83, 1066(1951).
	F^{19}(p,α)O^{16} Even parity for ground state γ polarization	A. P. French, J. O. Newton, Phys. Rev. 85, 1041(1952).
	Levels $O^{16}(\alpha,p)$ 1.36, 2.67, 3.92 a Al	M. L. Bullock, M. B. Sampson, Phys. Rev. 84, 967(1951).
	Levels F^{19}(p,p) 1.49 a 3.90 E_p = 7.4	D. B. Cowie et al., Phys. Rev. 87, 304 (1952); 85, 742A (1952).
	Level F^{19}(d,d) 1.52	F. B. Shull, Phys. Rev. 83, 875A(1951).
	O^{18}(p,n)1.87^{h}F Resonances: 3.3, 3.8, 4.25, 5.1, 5.6, 6.2, 6.7	J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951).
$_9F_{11}^{20}$	Level Ne^{22}(d,α) 0.57 ppl	R. Middleton, C. T. Tai, Proc. Phys. Soc. (London) A64, 801(1951).
	Levels F^{19}(d,p) 0.63 2.55 4.06 0.83 2.91 4.31 ppl 1.00 3.49 4.73 1.37	H. B. Burrows et al., Proc. Roy. Soc. (London) 209A, 478 (1951).
	Levels F^{19}(d,p) 1.1 ppl 2.5 3.3 3.9	Y. A. Nemilov, Izvest. Akad. Nauk USSR Ser. Fiz. 14, 319(1950); Chem. Abs. 45, 465i(1951).
	Q's F^{19}(d,p) 4.55, 3.86, 3.57, 2.35, 1.85, 1.43, 0.81, 0.14	F. B. Shull, Phys. Rev. 83, 875A(1951).
$_{10}Ne_9^{19}$	τ 18.6^S	J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951). F(p,n).
	τ 18.5^S β^+ 2.18 sπ No γ with E_γ >0.51 scin	G. Schrank, J. R. Richardson, Phys. Rev. 86, 248(1952); 83, 891A(1951). F(p,n)
$_{10}Ne_{10}^{20}$	μ $\leq 2 \times 10^{-4}$ M	G. Weinreich et al., Phys. Rev. 87, 229A (1952).
	Levels Ne(p,p) 1.44 a 4.36 E_p = 7.4	D. B. Cowie et al., Phys. Rev. 87, 304 (1952); 85, 742A (1952).

$_{9}Ne^{20}_{10}$	γ's 8.1, 9.3, 11.5	$F^{19}(d,n)$ pair s	J. Terrell, G. C. Phillips, Phys. Rev. 83, 703(1951).
	Resonances $E_p = 0.2 - 5.4$	$F^{19}(p,\alpha\gamma)O^{16}$ $F^{19}(p,n)Ne^{19}$	H. B. Willard et al., Phys. Rev. 85, 849 (1952).
	Resonances: 4.8, 5.4, 5.8, 6.1, 6.5	$F^{19}(p,n)18^{s}Ne$	J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951).
	No n thresholds for $E_d = 0.5 - 2$	$F^{19}(d,n)$	J. W. Butler, Phys. Rev. 85, 743A(1952).
	Resonances for $O^{16}(\pi)$ $F^{19}(p,\alpha)$ E_0: 0.710, 0.842, 1.130, 1.236, 1.367 Γ(kev): 35, 24, 43, 58, 26		G. C. Phillips, N. P. Heydenburg, Phys. Rev. 83, 184(1951).
	n yield increase at $E_d = 1.3$ $E_d = 0 - 3.5$.	$F^{19}(d,n)$	E. B. Tucker, Phys. Rev. 83, 473(1951).
$_{8}Ne^{21}_{11}$	Levels 0.33 4.71 7.30; 1.68 5.44 8.28; 2.79 5.74 8.91; 3.73 6.66*	$Ne^{20}(d,p)$	R. Middleton, C. T. Tai, Proc. Phys. Soc. (London) A64, 801(1951). *Isotopic assignment uncertain.
$_{8}Ne^{23}_{13}$	Q's 1.17, -0.04*	$Ne^{22}(d,p)$	R. Middleton, C. T. Tai, Proc. Phys. Soc. (London) A64, 801(1951). *Isotopic assignment uncertain.
Na	σ_t(2 – 80 kev) graph E_0: 2.8, 5.5 kev		C. T. Hibdon et al., Phys. Rev. 85, 595 (1952).
$_{11}Na^{21}_{10}$	τ 22.8^{s} β^+ 2.50 sπ No γ with E_γ>0.51	scin	G. Schrank, J. R. Richardson, Phys. Rev. 86, 248(1952); 83, 891A(1951). Mg(p,α)
$_{11}Na^{22}_{12}$	μ 2.2167	I	T. Kanda et al., Phys. Rev. 85, 938(1952).
	μ 2.2167 I ν(Na)/ν(H) = 0.2645182 ± 0.0000007		G. Lindström, Arkiv Fysik 4, 1(1951). [NaBr].
	Levels 0.43 2.07	$Mg^{25}(d,\alpha)$ ppl	P. M. Endt et al., Phys. Rev. 86, 518 (1952).
	Levels 2.10 3.70; 2.37 3.92; 2.69 4.45; 3.01	$Na^{23}(p,p)$ scin $E_p = 7.3$	H. F. Stoddart, H. E. Gove, Phys. Rev. 87, 238A(1952); 87, 262 (1952).
	Level 3.67	$Na^{23}(p,p)$ a $E_p = 7.4$	D. B. Cowie et al., Phys. Rev. 87, 304 (1952); 85, 742A (1952).
$_{11}Na^{24}_{13}$	γ (1.38) E2 $\alpha_{pair} = 0.6 \times 10^{-4}$ (2.76) E2 $\alpha_{pair} = 7.1 \times 10^{-4}$		S. D. Bloom, Phys. Rev. 87, 236A(1952); "Errata," p. 181.
	Pair $e^+e^-(\theta)$ for 2.76γ consistent with E2		K. Siegbahn, Arkiv för Fysik 4, 223 (1952).
	γ 0.04% ~3.7 ic 4.1γ/disintegration $<10^{-3}$		L. E. Beghian et al., Phys. Rev. 83, 186 (1951).
	Levels 0.7 1.7	$Na^{23}(d,p)$ ppl	Y. A. Nemilov, Izvest. Akad. Nauk USSR Ser. Fiz. 14, 319(1950); Chem. Abs. 45, 4651(1951).
	Levels 7 capture γ's	Na(n,γ) pair s	B. B. Kinsey et al., Phys. Rev. 83, 519 (1951).
Mg	σ_t(0.01 – 0.8 Mev) graph E_0: 0.085, 0.275, 0.430 σ_0: 23, 13, 13 J^+: ½, ½, ½		R. E. Fields, M. Walt, Phys. Rev. 83, 479 (1951).
$_{12}Mg^{23}_{11}$	τ 12.3^{s} β^+ 2.99	scin	F. I. Boley, D. J. Zaffarano, Phys. Rev. 84, 1059(1951)
$_{12}Mg^{24}_{12}$	Levels 4.11 4.21	Al(p,α) E_p=8	E. M. Reilley et al., Phys. Rev. 86, 857 (1952); 85, 704A (1952).
	Level 6.38	Mg(p,p) a	C. J. Baker et al., Phys. Rev. 85, 1051 (1952).
	(1.4γ)p(θ)	$Mg^{24}(p,p\gamma)$	H. E. Gove, A. Hedgran, Phys. Rev. 85, 727A (1952).
	36 resonances for E_p = 1.0 to 2.6	$Na^{23}(p,?\gamma)$	P. H. Stelson et al., Phys. Rev. 86, 629A (1952).
	Resonances: 5.3, 5.6, 6.0, 6.2, 6.4	$Na^{23}(p,n)11.9^{m}Mg$	J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951).
	σ_a(th n) 0.033	osc	H. Pomerance, T. Arnette, ORNL-940 (1950); priv. comm. (1952).
$_{12}Mg^{25}_{13}$	Level / Rel. Intensity 0 / 20 0.58 / 20 0.94 / 15 1.62 / 10	$Mg^{24}(d,p)$ ppl	J. Ambrosen, Nature 169, 408(1952). E_d = 1.9
	Level 0.584	Al(d,α) s	H. Enge et al., Phys. Rev. 83, 31(1951).

$_{12}Mg^{25}_{13}$

Levels $Al^{27}(d,\alpha)$ / $Mg^{24}(d,p)$

0.583
0.976 2.562 3.405
1.611 2.736 3.898
1.957 2.799 3.969
$E_d = 1.5 - 2.1$ ppl

P. M. Endt et al., Phys. Rev. 87, 27 (1952); 86, 630A (1952).

Levels $Mg^{24}(d,p)$
0.7 ppl
1.7
2.3

Y. A. Nemilov, Izvest. Akad. Nauk USSR Ser. Fiz. 14, 319 (1950); Chem. Abs. 45, 4651(1951).

New levels $Al^{27}(d,\alpha)$
3.96, 4.12, 6.98, 7.85, 8.62, 9.06, 9.75, 10.78, 11.89 ppl

E. C. Toops et al., Phys. Rev. 85, 280 (1952).

Levels $Mg(n,\gamma)$
11 capture γ's p

B. B. Kinsey et al., Phys. Rev. 83, 519 (1951).

σ_a(th n)
0.27 osc

H. Pomerance, T. Arnette, ORNL-940 (1950).

$_{12}Mg^{26}_{14}$

$Mg^{25}(d,p)$

Level	Rel. Intensity
0	1
1.84	4
3.00	7
4.00	10
4.41	15
4.91	10

ppl

J. Ambrosen, Nature 169, 408(1952). $E_d = 1.9$

Levels $Mg^{25}(d,p)$
1.825 4.92 ppl
2.97 5.27
3.97 5.32
4.35 5.50
4.86 6.15

P. M. Endt et al., Phys. Rev. 86, 518 (1952).

Levels $Mg(n,\gamma)$
5 capture γ's pair s

B. B. Kinsey et al., Phys. Rev. 83, 519 (1951).

σ_a(th n)
0.06 osc

H. Pomerance, T. Arnette, ORNL-940 (1950).

$_{12}M^{27}_{15}$

$Mg^{26}(d,p)$

Level	Rel. Intensity
0	35
0.98	15

ppl

J. Ambrosen, Nature 169, 408(1952). $E_d = 1.9$

Level $Mg^{26}(d,p)$
0.987 ppl

P. M. Endt et al., Phys. Rev. 86, 518 (1952).

Al

σ_t(14 Mev)
1.67

L. S. Goodman, ANL-4602 (Mar. 1951).

σ_t(156 Mev)
0.68

A. E. Taylor et al., Phil. Mag. 42, 751(1951).

σ_t graphs as function of temp(Al) and E_n

J. M. Cassels, Proc. Roy. Soc. (London) 208A, 527(1951).

$_{13}Al^{24}_{11}$

τ 2.3^s Mg(p,n)
Delayed α emitter
$E_p = 15.4$

A. C. Birge, Phys. Rev. 85, 753A(1952).

$_{13}Al^{25}_{12}$

Levels $Mg^{24}(p,p)$
9 levels for $E_p = 0.4 - 3.9$ s,pc

F. P. Mooring et al., Phys. Rev. 83, 219A (1951).

Mg(p,p)

Levels	J	Γ(kev)
3.11	$p_{1/2}$	1.5
3.75	f	0.3
3.88	$p_{1/2}$	36
3.91	d	0.1
4.25	d	0.15
4.63	d	0.3
5.34	$p_{1/2}$	200
5.83	d ?	- -

L. J. Koester, Phys. Rev. 85, 643(1952). Theoretical interpretation of data of Mooring et al., Phys. Rev. 84, 703 (1951).

$Mg^{24}(p,2pn)Na^{23}$ $E_p \leq 92$
yield curve, σ

J. W. Meadows, R. B. Holt, Phys. Rev. 83, 1257(1951).

$_{13}Al^{26}_{13}$

τ 6.5^s

L. Katz, A. G. W. Cameron, Phys. Rev. 84, 1115(1951).

14 resonances $Mg^{25}(p,\gamma)$
for $E_p = 0.386 - 1.043$

L. N. Russell et al., Phys. Rev. 86, 653 (1952).

$Mg^{25}(p,2p2n)Na^{22}$ $E_p \leq 92$
yield curve, σ

J. W. Meadows, R. B. Holt, Phys. Rev. 83, 1257(1951).

$_{13}Al^{28?}_{13}$

Mg(p,n)7.3^{s}Al
Resonances: 5.5, 5.8, 6.0, 6.3, 6.5

J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951).

$_{13}Al^{27}_{14}$

μ 3.6395 I

T. Kanda et al., Phys. Rev. 85, 938(1952).

μ 3.6394 I
$\nu(Al)/\nu(H) = 0.2605694 \pm 0.0000010$

G. Lindström, Arkiv Fysik 4, 1(1951). [$AlCl_3$].

q 0.155 Calc M with configuration interaction (unshielded)

G. F. Koster, Phys. Rev. 86, 148(1952).

Levels $Si^{29}(d,\alpha)$
0.84 sπ
1.01
2.21 ?
2.74 ?

D. M. Van Patter, W. W. Buechner, Phys. Rev. 87, 51 (1952).

Levels $Al^{27}(p,p)$
0.84 4.00 scin
1.01 4.47 $E_p = 7.3$
2.23 4.60
2.77 4.87
3.03 5.43
3.71

H. F. Stoddart, H. E. Gove, Phys. Rev. 87, 238A(1952); 87, 262 (1952).

Levels Al(p,p)

0.84	4.12	5.22
1.02	4.47	5.34
2.26	4.58	5.50
2.78	4.65	5.56
3.05	4.88	5.62
3.74	5.00	5.74
4.02	5.11	E_p=8

E. M. Reilley et al., Phys. Rev. 86, 857 (1952); 85, 704A (1952).

Levels Al(d,d)
0.97 4.74
2.39 5.76
3.17 s

K. K. Keller, Phys. Rev. 84, 884(1951). $E_d = 10.4$ Mev.

$_{9}Al^{27}_{14}$	Levels: 0.99, 3.00, 4.39; 1.72, 3.63, 4.66; 2.22, 3.93, 5.46 — Al(p,p) a	C. J. Baker et al., Phys. Rev. 85, 1051 (1952).
	Levels: 1.02, 2.30, 2.89; 3.32, 4.48 — $Al^{27}(p,p)$ a, E_p = 7.4	D. B. Cowie et al., Phys. Rev. 87, 304 (1952); 85, 742A(1952).
	Capture γ's: E_γ 6.2, 7.2, 5.3, 7.3, 5.5 (E_ϕ 0.450, 0.813, 0.840, 0.954, 1.015) — $Mg^{26}(p,\gamma)$ a coin	L. N. Russell et al., Phys. Rev. 86, 819 (1952).
	11 resonances for E_p = 0.30 to 1.20 — $Mg^{26}(p,\gamma)$	W. E. Taylor et al., Phys. Rev. 86, 630A (1952).
	Rel σ(n,γ + n,p) E_n = 2.3 – 3.1 Mev	S. Yamabe et al., J. Phys. Soc. Japan 7, 140(1952).
	$Mg^{26}(p,2p3n)Na^{22}$ $E_p \leq 92$ yield curve, σ	J. W. Meadows, R. B. Holt, Phys. Rev. 83, 1257(1951).
$_{13}Al^{28}_{15}$	β^- 2.87 sl; γ 1.78 sl;pe⁻; β to ground < 2%	H. T. Motz, D. E. Alburger, Phys. Rev. 86, 165(1952); 83, 215A(1951).
	Level: 0.031 — $Al^{27}(d,p)$ s	H. Enge et al., Phys. Rev. 83, 31(1951).
	E_γ = 0.031 — Al(d,p) pc,a,scin; E_d = 0.7	R. D. Smith, R. A. Anderson, Nature 168, 429(1951).
	Levels: 1.04, 1.58, 2.17, 2.52, 3.47; 3.98, 4.83, 5.16, 5.80, 6.10; 6.40, 6.90, 7.40, 8.50 — Al(d,p) s	K. K. Keller, Phys. Rev. 84, 884(1951). E_d = 10.4 Mev.
	Levels: 1.1, 2.4, 3.7, 5.2 — $Al^{27}(d,p)$ ppl	Y. A. Nemilov, Izvest. Akad. Nauk USSR Ser. Fiz. 14, 319(1950); Chem. Abs. 45, 465i(1951).
	Levels: 29 capture γ's — Al(n,γ) pair s	B. B. Kinsey et al., Phys. Rev. 83, 519 (1951).
Si	Relative abundances: 28 92.14%, 29 4.73%, 30 3.13% — ms	J. F. Norton, P. D. Zemany, J. Chem. Phys. 20, 525(1952).
	σ_t(0.01 – 0.8 Mev): E_0 0.195, 0.570; σ_0 12, 8; J ½, >½ — graph	R. E. Fields, M. Walt, Phys. Rev. 83, 479 (1951).
$_{14}Si^{27}_{13}$	τ 5.4"; β^+ 3.48 — scin	F. I. Boley, D. J. Zaffarano, Phys. Rev. 84, 1059(1951).
$_{14}Si^{28}_{14}$	Levels: 7.6, 10.46; 12.12 — $Al^{27}(p,\gamma)$ pair s	J. G. Rutherglen et al., Proc. Phys. Soc. (London) 64A, 906(1951).
	Resonances: 6.2, 6.4 — $Al^{27}(p,n)4.9^{s}Si$	J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951).
	d,n(θ); J* 2 or 3+ — Al(d,n)	L. Schecter, Phys. Rev. 83, 695(1951). *Spin of Si^{28} excited.
	σ_a(th n) 0.08 — osc	H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{14}Si^{29}_{15}$	μ 0.55 assuming I = ½ — I	J. Hatton et al., Phys. Rev. 83, 672(1951). [$Be_3Al_2Si_6O_{18}$].
	μ −0.55492 assumed I=½ — I	S. S. Dharmatti, H. E. Weaver, Jr., Phys. Rev. 84, 843(1951).
$_{14}Si^{29}_{15}$	Levels: 1.278, 2.027, 2.426, 3.070, 3.623, 4.078; 4.840, 4.897, 4.934, 5.946, 6.105, 6.380 — $Si^{28}(d,p)$ sπ	D. M. Van Patter, W. W. Buechner, Phys. Rev. 87, 51 (1952).
	Levels: 1.3, 2.1, 3.1, 3.6; 4.4, 4.8, 5.4, 6.2 — $Si^{28}(d,p)$ ppl	Y. A. Nemilov, Izvest. Akad. Nauk USSR Ser. Fiz. 14, 319(1950); Chem. Abs. 45, 465i(1951).
	Levels: 8 capture γ's — $Si(n,\gamma)$ pair s	B. B. Kinsey et al., Phys. Rev. 83, 519 (1951).
	σ_a(th n) 0.27 — osc	H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{14}Si^{30}_{16}$	Levels: 2.3, 3.6, 4.9 — Al(α,p) from pγ	H. H. Landon, Phys. Rev. 83, 1081(1951).
	γ's: γ_1 2.32, γ_2 3.6, γ_3 1.28, γ_4 ~2.7; $p_1\gamma_1$, $p_2\gamma_2$, $p_3\gamma_2$, $p_3\gamma_3$, $p_3\gamma_4$ — $Al^{27}(\alpha,p)$	R. C. Allen et al., Phys. Rev. 84, 1203 (1951).
	Levels: 2.24, 3.51, 3.79 — $Si^{29}(d,p)$ sπ	D. M. Van Patter, W. W. Buechner, Phys. Rev. 87, 51 (1952).
	Levels: 7 capture γ's — $Si(n,\gamma)$ pair s	B. B. Kinsey et al., Phys. Rev. 83, 519 (1951).
	σ_a(th n) 0.41 — osc	H. Pomerance, T. Arnette, ORNL-940 (1950).

$_{14}Si^{31}_{17}$	τ 2.65 ± 0.01[h]		H. T. Motz, Phys. Rev. 85, 501(1952). P^{31}(pile n,p); chem.
	β^- 1.471	sl	
	β^- 1.486	s	A. H. Wapstra, Phys. Rev. 86, 561 (1952).
	No γ		
	Levels Si^{30}(d,p)		D. M. Van Patter, W. W. Buechner, Phys. Rev. 87, 51 (1952).
	0.757 3.140	sz	
	1.699 3.539		
	2.319 4.384		
	2.791		
P	σ_s(th n) 4.67		C. T. Hibdon, C. O. Muehlhause, ANL-4680 (Sept. 1951).
$_{15}P^{30}_{15}$	Levels Si^{29}(d,n)		C. E. Mandeville et al., Phys. Rev. 85, 193(1952); 85, 725A (1952).
	0.75, 1.46, 2.00	ppl	
$_{15}P^{31}_{16}$	μ 1.1308	I	T. Kanda et al., Phys. Rev. 85, 938(1952).
	Levels Si^{30}(d,n)		C. E. Mandeville et al., Phys. Rev. 85, 193(1952); 85, 725A (1952).
	0.33, 1.19, 2.22, 3.41	ppl	
$_{15}P^{32}_{17}$	β^- 1.697	sl	H. T. Motz, Phys. Rev. 85, 501(1952).
	β^- 1.704	sl	E. N. Jensen et al., Phys. Rev. 85, 112 (1952).
	Bump at $H\rho \sim 1000$ not found by S(d) or P(n)		
	$\bar{E}_{\beta^-}$ 0.70 ± 0.03	ic	R. S. Caswell, Phys. Rev. 86, 82(1952).
	Continuous γ spectrum $\gamma(E_\gamma > 0.09)/\beta^- = 0.0024$		L. Madansky, F. Rasetti, Phys. Rev. 83, 187(1951).
	Levels P^{31}(d,p)		D. M. Van Patter, P. M. Endt, Phys. Rev. 86, 502(1952); 86, 630A(1952); MIT Progress Report (Aug. 1951).
	0.077 2.18 3.14 ?		
	0.515 2.22 3.26		
	1.15 2.65 3.32		
	1.31 2.74 4.03		
	1.75 3.00 4.20		
	Levels P^{31}(n,γ)		B. B. Kinsey et al., Phys. Rev. 85, 1012 (1952).
	20 capture γ's pair s		
	d,p(ϑ) P^{31}(d,p)		W. C. Parkinson et al., Phys. Rev. 87, 387 (1952).
	l = 2 shows neutron captured in d state		
$_{15}P^{33}_{18}$	τ 24.8[d]		E. N. Jensen et al., Phys. Rev. 85, 112 (1952). S(n,p); S(γ,p).
	β^- 0.26	sl	
	τ 25[d]		R. K. Sheline et al., Phys. Rev. 83, 919(1951). S,Cl(≤48 Mev γ)
	β^- 0.26	a,sl	
	(0.5 Mev γ)/β <0.07		
S	Variation in terrestrial S^{32}/S^{34} ratio Same ratio for igneous and meteoritic samples		J. Macnamara et al., Can. J. Chem. 30, 73(1952).
$_{16}S^{31}_{15}$	τ 2.66[s]		R. N. Haslam et al., Can. J. Physics 30, 257(1952).
	τ 3.2[s]		D. J. Zaffarano, F. I. Boley, Phys. Rev. 83, 223(A)(1951) and 84, 1059(1951).
	β^+ 4.06	scin	
$_{16}S^{32}_{16}$	Levels P^{31}(d,n)		S. C. Snowdon, Phys. Rev. 87, 1022(1952); 86, 630A(1952).
	0.5 3.3 4.9	ppl	
	1.5 3.8 5.2		
	2.2 4.1 5.5		
	2.7 4.5 E_d = 1.6		
	Levels S^{32}(p,p)		J. S. Arthur et al., Phys. Rev. 87, 237A (1952); verbal report.
	2.42 5.04	scin	
	3.81 5.81 E_p = 8		
	4.32 5.95		
	4.50 5.90		
$_{16}S^{33}_{17}$	μ 0.64290	I	S. S. Dharmatti, H. E. Weaver, Phys. Rev. 83, 845(1951). [CS_2].
	$\nu(S^{33})/\nu(N^{14})$ = 1.06174 ± 0.00014		
	μ 0.63	Mic	J. R. Eshbach et al., Phys. Rev. 85, 532 (1952).
	Levels $S(n,\gamma)$		B. B. Kinsey et al., Phys. Rev. 85, 1012 (1952).
	15 capture γ's pair s		
$_{16}S^{35}_{19}$	β^- 0.167	sl	R. B. Heller et al., Phys. Rev. 83, 848 (1951).
	F-K plot linear to 0.032		
$_{17}Cl^{32}_{16}$	τ 1.8[s]		D. J. Zaffarano, F. I. Boley, Phys. Rev. 83, 223(A)(1951) and 84, 1059(1951).
	β^+ 4.43	scin	
$_{17}Cl^{34}_{17}$	γ 1.16	scin	H. K. Ticho, Phys. Rev. 84, 847(1951). Cl(18 Mev p,pn).
	2.10		
	3.22		
$_{17}Cl^{35}_{18}$	μ 0.82110	I	H. E. Walchli et al., Phys. Rev. 85, 922 (1952).
	q −0.0782 Calc M with configuration interaction (unshielded)		G. F. Koster, Phys. Rev. 86, 148(1952).
	q coupling ratio Cl^{35}/Cl^{37} 1.268 [p-$C_6H_4Cl_2$]		M. Buyle-Bodin and D. Dautreppe, Compt. rend. 233, 1101(1951).
	q coupling ratio Cl^{35}/Cl^{37} = 1.2686 M ± 0.0004		V. Jaccarino, J. G. King, Phys. Rev. 83, 471(1951).
	$\mu(Cl^{35})/\mu(Cl^{37})$ = 1.20136 ± 0.00005		
	q coupling ratio $TlCl^{35}/TlCl^{37}$ 1.2691 ± 0.0004 M		R. O. Carlson et al., Phys. Rev. 85, 784 (1952).

$_{17}Cl^{35}_{18}$	$q(Cl^{35})/q(Cl^{37})$ 1.2688	H. G. Dehmelt and H. Krüger, Z. Physik 129, 401(1951).
	1.270 ± 0.005 M	H. J. Zeiger, D. I. Bolef, Phys. Rev. 85, 788(1952).
	$q(Cl^{35})/q(Cl^{37})$ depends on molecule and temp. Mic	T. C. Wang et al., Phys. Rev. 86, 809 (1952).
$_{17}Cl^{36}_{19}$	β^- 0.714 s C_{2T}, C_{2V} fit spectral shape	L. Feldman, C. S. Wu, Phys. Rev. 87, 1091(1952).
	I 2 Mic q −0.0168 Mic	C. M. Johnson, W. Gordy, Phys. Rev. 83, 1249(1951).
	I 2 Mic q −0.0164 Mic	D. A. Gilbert, Phys. Rev. 85, 716A(1952).
	Levels Cl(n,γ) 12 capture γ's pair s	B. B. Kinsey et al., Phys. Rev. 85, 1012 (1952).
$_{17}Cl^{36?}_{19}$	Capture γ's Cl(th n,γ) 5.5, 6.2 scin Other peaks	B. Hamermesh, V. Hummel, Phys. Rev. 83, 663(1951).
$_{17}Cl^{37}_{20}$	q −0.0616 Calc M with configuration interaction (unshielded)	G. F. Koster, Phys. Rev. 86, 148(1952).
A	σ_a coh 0.5	A. W. McReynolds, Phys. Rev. 84, 969 (1951). Assuming σ_a coh(O) = 4.2.
	A^{40}/A^{36} $\left[\frac{\text{inner earth}}{\text{atmospheric}}\right] > 1$	G. Boato, Nuovo cimento 9, 44(1952).
$_{18}A^{37}_{19}$	K Continuous γ spectrum E_γ(max) ~0.75	C. E. Anderson et al., Phys. Rev. 87, 195A(1952); 87, 668(1952).
	Monoenergetic recoils of 9.7 ev observed in K capture	G. W. Rodeback, J. S. Allen, Phys. Rev. 86, 446(1952).
	$Cl^{37}(p,n)$ Level Rel. σ ppl 0 0.78 1.41 0.22	P. H. Stelson, W. M. Preston, Phys. Rev. 86, 807(1952). E_p = 3.6.
$_{18}A^{38}_{20}$	Resonances $Cl^{37}(p,n)A^{37}$ over 100 found for E_p = 1.64 – 2.51	W. A. Schoenfeld et al., Phys. Rev. 85, 873(1952).
	Cl(p,n)34^{d}A Excitation function	J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951).
	σ(th n,γ)265^{y}A 0.8	S. Katcoff, Phys. Rev. 87, 886(1952).
$_{18}A^{39}_{21}$	τ 265 ± 30^y	H. Zeldes et al., Phys. Rev. 86, 811(1952). Cl(pile n).
$_{18}A^{39}_{21}$	β^- >0.35* No βγ* No 2.7^m activity	C. E. Anderson et al., Phys. Rev. 87, 195A(1952); *verbal report. A^{36}(3.8 Mev d,p).
$_{18}A^{39?}_{21}$	τ 2.4^m	M. Hoffman, Phys. Rev. 83, 215A(1951).
$_{18}A^{40}_{22}$	σ(th n,γ)1.83^{h}A 0.53	S. Katcoff, Phys. Rev. 87, 886(1952).
$_{18}A^{41}_{23}$	τ 1.83^h σ(th n,γ)3.5^{y}A 0.06	S. Katcoff, Phys. Rev. 87, 886(1952).
	p(θ) ppl A(d,p) Level I ground ½-, ⅗- 1.34 ½+ ?	W. M. Gibson, E. E. Thomas, Proc. Roy. Soc. (London) 210A, 543(1952). E_d = 7.81.
	βγ delay scin 6.7×10^{-9}s	L. G. Elliott, Phys. Rev. 85, 942(1952).
$_{18}A^{42}_{24}$	τ >3.5^y p 12.5^hK^{42}	S. Katcoff, Phys. Rev. 87, 886(1952).
$_{19}K^{37}_{18}$	τ 1.2^s β^+ 4.57 scin	F. I. Boley, D. J. Zaffarano, Phys. Rev. 84, 1059(1951).
$_{19}K^{38}_{19}$	τ 7.7^m β^+ 2.8 s γ	D. Green, J. R. Richardson, Phys. Rev. 83, 891A(1951). K(18 Mev p).
	γ 2.16 scin	H. K. Ticho, Phys. Rev. 84, 847(1951). K(18 Mev p,pn).
$_{19}K^{40}_{21}$	Relative isotopic abundance 0.0118%	C. Reuterswärd, Arkiv för Fysik 4, 203(1952).
	μ −1.2964 M $g_I(K^{40})/g_I(K^{39})$ = −1.24346 ± 0.00024	J. T. Eisinger et al., Phys. Rev. 86, 73 (1952); 85, 716A (1952).
	β^- 1.28 scin ΔI = 4, yes shape β's/sec(gm of K) = 27.1	M. L. Good, Phys. Rev. 83, 1054(1951).
	β^- 1.325 s C_{3T}, C_{2A}, C_{4T}, C_{4V} fit spectral shape	L. Feldman, C. S. Wu, Phys. Rev. 87, 1091(1952).
	γX, γ(Auger e$^-$) consistent with K/γ = 1	M. Paganelli, G. Quareni, Phys. Rev. 86, 423(1952); Nuovo cimento 9, 324(1952).
	γ(Auger e$^-$) coincidences	M. Paganelli, G. Quareni, Nuovo cimento 8, 598(1951).
	σ_a(th n) 75 osc	H. Pomerance, priv. comm. (1952).
$_{19}K^{40?}_{21}$	Levels K(n,γ) 7 capture γ's pair s	B. B. Kinsey et al., Phys. Rev. 85, 1012 (1952).

$_{19}K^{42}_{23}$	$\beta\gamma(\theta)$ indicates I = 2+ for 1.51 level of Ca^{42} b = −0.055 for E_β = 1.23		D. T. Stevenson, M. Deutsch, Phys. Rev. 84, 1071(1951).
$_{19}K^{42?}_{23}$	Levels 5 capture γ's	K(n,γ) pair s	B. B. Kinsey et al., Phys. Rev. 85, 1012 (1952).
$_{20}Ca^{39}_{19}$	τ 1.1^s β^+ 5.13	scin	F. I. Boley, D. J. Zaffarano, Phys. Rev. 84, 1059(1951); 83, 223A(1951).
$_{20}Ca^{40}_{20}$	σ_a(th n) ≤0.22 Ca^{43} contribution unknown	osc	H. Pomerance, priv. comm. (1952).
$_{20}Ca^{41}_{21}$	τ 1.2×10^5y* K x ray	pc	F. Brown et al., Phys. Rev. 84, 1243(1951). *Based on $\sigma[Ca^{40}(n,\gamma)Ca^{41}]$ = 0.35 and K fluorescence yield = 0.1.
$_{20}Ca^{41?}_{21}$	Levels 7 capture γ's	Ca(n,γ) pair s	B. B. Kinsey et al., Phys. Rev. 85, 1012 (1952).
$_{20}Ca^{42}_{22}$	σ_a(th n) 40	osc	H. Pomerance, priv. comm. (1952).
$_{20}Ca^{45}_{25}$	$\bar{E}_{\beta^-}$ 0.0746 ± 0.003	ic	R. S. Caswell, Phys. Rev. 86, 82(1952).
$_{20}Ca^{48}_{28}$	τ $>2 \times 10^{16}$y		J. W. Jones, T. P. Kohman, Phys. Rev. 85, 941(1952).
$_{21}Sc^{46}_{25}$ 20^s	γ 0.142 K/L~10	sπ;ce$^-$ ppl	S. B. Burson, W. C. Rutledge, Phys. Rev. 86, 633A(1952).
$_{21}Sc^{48}_{27}$	2 γ's of ~0.98 in cascade with 1.33 γ $\gamma\gamma$ Co^{60} comparison; scin		B. Hamermesh et al., Phys. Rev. 87, 528 (1952). Ti(14 Mev n,p).
Ti	σ_a(th n) 3.96		C. T. Hibdon, C. O. Muehlhause, ANL-4680 (Sept. 1951).
	σ_t(3000 ev) 5.02		C. T. Hibdon, ANL-4602 (Mar. 1951).
	σ_t(2 − 40 kev) graph E_0 19, 23 kev		C. T. Hibdon et al., Phys. Rev. 85, 595 (1952).
	σ_t(14 Mev) 2.25		L. S. Goodman, ANL-4602 (Mar. 1951).
$_{22}Ti^{46}_{24}$	σ_a(th n) 0.57	osc	H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{22}Ti^{47}_{25}$	σ_a(th n) 1.62	osc	H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{22}Ti^{48}_{26}$	σ_a(th n) 7.98	osc	H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{22}Ti^{49}_{27}$	σ_a(th n) 1.80	osc	H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{22}Ti^{49?}_{27}$	I $\frac{7}{2}$? μ −1.1024	I I	C. D. Jeffries et al., Phys. Rev. 85, 478 (1952).
$_{22}Ti^{50}_{28}$	σ_a(th n) 0 ± 0.2	osc	H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{22}Ti^{51}_{29}$	γ 0.32	scin	E. der Mateosian, Phys. Rev. 83, 223A (1951).
V	σ_s coh 0.03 (−)		S. W. Peterson, H. A. Levy, Phys. Rev. 87, 462(1952).
	$\sigma_s$coh 0.028 (+)	mir	A. W. McReynolds, R. J. Weiss, Phys. Rev. 83, 171(1951).
	σ_s(0.0017 ev) 6 σ_t(0.0017 ev) 4.7		P. A. Egelstaff, Nature 168, 290(1951).
	Resonance E_0 ~3300 ev		S. P. Harris, Phys. Rev. 83, 235A(1951).
	σ_t(2 − 25 kev) graph E_0 7, 13, 17, 23? kev		C. T. Hibdon et al., Phys. Rev. 85, 595 (1952).
	σ_t(14 Mev) 2.38		L. S. Goodman, ANL-4602 (Mar. 1951).
$_{23}V^{48}_{25}$	γ ~4% 2.22 Crossover γ <0.5%	scin	H. K. Ticho et al., Phys. Rev. 86, 422 (1952); 87, 195A (1952). Ti(p,n); chem.
	$\gamma\gamma(\theta)$ consistent with I = 4,2,0		P. S. Jastram, C. E. Whittle, Phys. Rev. 87, 1133(1952). Ti(d); chem.
$_{23}V^{50}_{27}$	μ +3.3406 assuming I(V^{50}) = 6	I	H. E. Walchli, H. W. Morgan, Phys. Rev. 87, 541(1952).
$_{23}V^{51}_{28}$	I $\frac{7}{2}$	para	B. Bleaney et al., Proc. Phys. Soc. (London) 64A, 601(1951).
	μ +5.1402 function of chemical compound	I	H. E. Walchli, H. W. Morgan, Phys. Rev. 87, 541(1952).
$_{23}V^{52}_{29}$ 2.6^m	β^- 2.0	a	O. Bruna, Anz. Akad. Wiss. Wien, Math.-naturw. Klasse 94 (1950).
Cr	σ_t(14 Mev) 2.33		L. S. Goodman, ANL-4602 (Mar. 1951).
$_{24}Cr^{48}_{24}$	τ ~23^h p 16.2^{d}V		G. Rudstam et al., Phys. Rev. 87, 358 (1952). Fe(340 Mev p); chem.

$_{24}Cr^{51}_{27}$	τ 27.8 ± 0.3^d		W. S. Lyon, Phys. Rev. 87, 1126(1952).
	γ 8% 0.32 scin No other γ γX e^-/x ray = 3.0×10^{-4}		
$_{24}Cr^{53}_{29}$	I ½ para μ ~(±)0.45		B. Bleaney, K. D. Bowers, Proc. Phys. Soc. (London) A64, 1135(1951).
$_{24}Cr^{53?}_{29}$	Fe(n,σ) ~300 σ tracks found with th n's. E_n ~4.5 ppl		H. Hänni, J. Rossel, Helv. Phys. Acta 25, 521(1952).
$_{24}Cr^{54?}_{30}$	Fe(n,σ) ~100 σ tracks found with th n's. E_n ~5.7 ppl		H. Hänni, J. Rossel, Helv. Phys. Acta 25, 521(1952).
Mn	σ_t(2 – 80 kev) graph E_0 2.8, 8, 23, 38 kev (60, 67, 78) ?		C. T. Hibdon et al., Phys. Rev. 85, 595 (1952).
	σ_t (0.08 – 1.0 Mev) graph		W. F. Stubbins, Phys. Rev. 84, 902(1951).
$_{25}Mn^{53}_{28}$	Cr^{53}(p,n) ppl Level Rel. σ 0 0.35 0.37 0.43 1.27 0.22		P. H. Stelson, W.M. Preston, Phys. Rev. 86, 807(1952). E_p = 3.5.
	Levels Cr^{53}(p,nγ) 0.385 scin 1.27		C. L. McClelland et al., Phys. Rev. 86, 631A(1952).
$_{25}Mn^{54}_{29}$	n yield Cr^{53}(p,n) 271 peaks E_p = 1.42 – 2.47		J. A. Lovington et al., Phys. Rev. 85, 585 (1952); 83, 213A (1951).
$_{25}Mn^{55}_{30}$	Cr^{54}(p,n) 56 peaks E_p = 2.2 – 2.47		J. A. Lovington et al., Phys. Rev. 85, 585 (1952); 83, 213A (1951).
	I ½ Mic		A. Javan, A. V. Grosse, Phys. Rev. 87, 227A(1952).
$_{25}Mn^{56}_{31}$	Capture γ's Mn(th n,γ) 5.0, 7.2 scin No line at 2.2		B. Hamermesh, V. Hummel, Phys. Rev. 83, 663(1951).
	Capture γ's Mn(n,γ) 5.32, 7.16 scin		R. W. Pringle, G. Isford, Phys. Rev. 83, 467(1951).
Fe	σ_s incoh 0.42		H. Palevsky et al., Phys. Rev. 87, 221A(1952).
	σ_s(0.0017 ev) 1.5 σ_t(0.0017 ev) 1.4		P. A. Egelstaff, Nature 168, 290(1951).
	σ_t(0.003 ev – 10kev) graph		W. W. Havens, Jr., and L. J. Rainwater, Phys. Rev. 83, 1123(1951).
	σ_t (77 – 800°K) graphs E_n ~0.002 ev		R. Latham, J. M. Cassels, Proc. Phys. Soc. (London) A65, 241(1952).
Fe	σ_t(3000 ev) 7.00		C. T. Hibdon, ANL-4602 (Mar. 1951).
	σ_t(2 – 24 kev) graph E_0 8.5, 16? kev		C. T. Hibdon et al., Phys. Rev. 85, 595 (1952).
	σ_{el}(1.9 Mev) 1.4 σ_{in}(1.9 Mev) 0.8 assuming isotropy		P. H. Stelson, W. M. Preston, Phys. Rev. 86, 132(1952).
	σ_t(14 Mev) 2.33		L. S. Goodman, ANL-4602 (Mar. 1951).
	σ_t(156 Mev) 1.24		A. E. Taylor et al., Phil. Mag. 42, 751(1951).
$_{26}Fe^{52}_{26}$	β^+ ~0.64 a K/β^+ ~1.6 No γ p ≥ 95% 21^mMn		G. Friedlander and J. M. Miller, Phys. Rev. 84, 588(1951).
$_{26}Fe^{53}_{27}$	β^+ 2.6* scin F-K plot linear*		F. I. Boley, L. J. Laslett, Phys. Rev. 83, 215A(1951) and *verbal report.
$_{26}Fe^{54}_{28}$	σ_a(th n) 2.18 osc		H. Pomerance, priv. comm. (1952).
$_{26}Fe^{55}_{29}$	τ 3.0^y pc		R. P. Schuman and A. Camilli, Phys. Rev. 84, 158(1951).
	E_{dis} 0.21 scin From continuous γ endpoint		P. R. Bell et al., Science 115, 12(1952); ORNL-1164(1951).
	E_{dis} 0.21 scin From continuous γ endpoint		D. Maeder and P. Preiswerk, Phys. Rev. 84, 595(1951).
$_{26}Fe^{56}_{30}$	Level Fe(n,n) 0.850 ppl		P. H. Stelson, W. M. Preston, Phys. Rev. 86, 132(1952).
	σ_a(th n) 2.55 osc		H. Pomerance, priv. comm. (1952).
$_{26}Fe^{57}_{31}$	Capture γ's Fe(th n,γ) 6.0, 7.4 scin 8.6(Fe^{58}?) No line at 1.4		B. Hamermesh, V. Hummel, Phys. Rev. 83, 663(1951).
	σ_a(th n) 2.36 osc		H. Pomerance, priv. comm. (1952).
$_{26}Fe^{58}_{32}$	σ_a(th n) 2.5 osc		H. Pomerance, priv. comm. (1952).
$_{26}Fe^{59}_{33}$	τ 45.1^d pc		R. P. Schuman and A. Camilli, Phys. Rev. 84, 158(1951).
	τ 47.1 ± 0.5^d		J. Tobailen, Compt. rend. 233, 1360(1951). Differential ic's.
	β^- 0.45 sl γ ~50% 1.10 sl,pe$^-$ ~50% 1.29 No 0.26β, no $\gamma\gamma$		K. C. Mann, G. H. Hanson, Phys. Rev. 83, 893A(1951). Fe(n,γ).
	γ 2.5% 0.195 scin (0.195γ)(1.0γ)		F. R. Metzger, Phys. Rev. 85, 727A(1952).

$_{26}Fe^{59}_{33}$	γ 1.11 sl;ce$^-$ $\alpha_K = 1.45 \times 10^{-4}$ 1.30 $\alpha_K = 0.84 \times 10^{-4}$ $(0.26\beta^-)/(0.46\beta^-) = 48/52$	D. Brower et al., Phys. Rev. 86, 1054(1952).
Co	σ_a(th n) 35 osc	J. Ailloud et al., J. phys. radium 13, 171(1952).
	σ_t(0.025 ev) 38.7(extrapolated) σ_t(0.03 – 1.2 ev) graph	S. Eernstein et al., Phys. Rev. 87, 487 (1952).
	σ_a(th n) 8.34 σ_t(10.0 ev) 10.29 (19.5 ev) 8.52 (2700 ev) 4.09 (3000 ev) 4.55	C. T. Hibdon, ANL-4602 (Mar. 1951).
	σ_t(2 – 100 kev) graph E_0 5.5, 8?, 29.5 kev	C. T. Hibdon et al., Phys. Rev. 85, 595 (1952).
	σ_t(0.08 – 1.0 Mev) graph	W. F. Stubbins, Phys. Rev. 84, 902(1951).
	Resonances (ev) E_0 σ_0 Γ 126 9100* 5.0* 5000 *Assuming $\Gamma_n \gg \Gamma_\gamma$.	W. W. Havens, Jr., and L. J. Rainwater, Phys. Rev. 83, 1123(1951).
	Resonance E_0 ~3600* ev	S. P. Harris, Phys. Rev. 83, 235A(1951) and *verbal report.
$_{27}Co^{55}_{28}$	$\beta\gamma(\theta)$ = const.	D. T. Stevenson and M. Deutsch, Phys. Rev. 83, 1202(1951).
$_{27}Co^{56}_{29}$	γ 0.87 2.04 scin 1.25 2.53 1.73 d 6.4^d Ni^{56}	R. K. Sheline, R. W. Stoughton, Phys. Rev. 87, 1(1952).
	$\beta\gamma(\theta)$ = const.	D. T. Stevenson and M. Deutsch, Phys. Rev. 83, 1202(1951).
$_{27}Co^{58}_{31}$ 9.3^h	τ_1 9.0^h γ 0.026 a,ce$^-$ Co x rays Fe^{58}(6.3 Mev p,n).	C. J. Avery et al., Phys. Rev. 87, 216A(1952).
72^d	Fe x rays	C. J. Avery et al., Phys. Rev. 87, 216A(1952). Fe^{58}(6.3 Mev p,n).
$_{27}Co^{59}_{32}$	I $7/2$ para	B. Bleaney, D. J. E. Ingram, Proc. Roy. Soc. A208, 143(1951).
$_{27}Co^{60}_{33}$ 10.7^m	β_1 0.28% (1.56) β_2 <10^{-4}% (2.9)	M. Deutsch, G. Scharff-Goldhaber, Phys. Rev. 83, 1059(1951).
5.2^y	τ 5.27 ± 0.07^y	J. Tobailen, Compt. rend. 233, 1360(1951). Differential ic's
	μ 3.0 $\gamma(\theta,T)$	B. Bleaney et al., Phys. Rev. 85, 688 (1952).
$_{27}Co^{60}_{33}$ 5.2^y	μ 3.2 $\gamma(\theta,T)$	C. J. Gorber et al., Physica 18, 135 (1952).
	β^- 0.306 sl γ (1.17) ce$^-$ $\alpha = 1.72 \times 10^{-4}$ (1.33) $\alpha = 1.24 \times 10^{-4}$	C. Y. Fan, Phys. Rev. 87, 252(1952).
	$\gamma\gamma(\theta)$ inconsistent with I = 4,2,0 τ(1.33 level)<10^{-11}s from $\gamma\gamma(\theta) \neq$ f(external H)	H. Aeppli et al., Phys. Rev. 87, 379 (1952).
	$\gamma\gamma(\theta)$ 1.1γ, 1.3γ octupole	S. Das, S. K. Sen, Indian J. Phys. 25, 451(1951).
	Level Co^{59}(d,p) 0.46* a	D. C. Hoesterey, Phys. Rev. 87, 216A(1952); *verbal report.
$_{27}Co^{61}_{34}$	τ 99.0^m β^- 45% 1.00 a 55% 1.42 γ ~0.5	L. A. Smith et al., Phys. Rev. 84, 842(1951); 83, 886A(1951). Cu(γ,α); Ni(γ,p); chem.
Ni	σ_t(2 – 41 kev) graph E_0 4.5, 17, 30? kev	C. T. Hibdon et al., Phys. Rev. 85, 595 (1952).
	σ_t(14 Mev) 2.41	L. S. Goodman, ANL-4602 (Mar. 1951).
	Level Ni(p,p) 1.44 a	N. P. Heydenburg et al., Phys. Rev. 85, 742A (1952).
	Levels Ni(p,p) 17 values E_p=8 unassigned to isotopes	R. Ely, Jr. et al., Phys. Rev. 86, 859 (1952); 85, 704A (1952).
$_{28}Ni^{56}_{28}$	τ 6.4 ± 0.1^d β^+ <1%, α<0.02% γ 100%* 0.17 scin 30% 0.28 40% 0.48 80% 0.81 10% 0.96 5% 1.33 15% 1.58 2% 1.75 (Co K X-ray)γ, $\gamma\gamma$ p 80^d Co^{56}	R. K. Sheline, R. W. Stoughton, Phys. Rev. 87, 1(1952). Fe^{54}(39 Mev α,2n); ion chem. *Relative intensities.
	τ 6.0 ± 0.5^d K γ 0.16 scin ~0.25 ? 0.5 0.8 >1.4 p 80^d Co^{56}	W. J. Worthington, Jr., Phys. Rev. 87, 158(1952). Zn(340 Mev p); ion chem. Fe(α,2n).
$_{28}Ni^{57}_{29}$	β^+ 0.835 sl γ 0.123 ce$^-$,pe$^-$ 1.4* 1.375 pe$^-$ 0.2* 1.91 pe$^-$	R. Canada, A. C. G. Mitchell, Phys. Rev. 83, 955(1951). Fe(α,n); chem. *Relative to annihil. γ.

$_{28}Ni^{57}_{29}$	γ 0.114 scin 1.39 1.90		R. K. Sheline, R. W. Stoughton, Phys. Rev. 87, 1(1952). Fe^{54}(39 Mev α, n); ion chem.
$_{28}Ni^{58}_{30}$	σ_s coh 27		S. Bernstein et al., Phys. Rev. 87, 487 (1952).
	$\sigma[Ni^{58}(n,2n)36^h Ni]$ Yield for $E_n \simeq 12-19$		H. C. Martin, B. C. Diven, Phys. Rev. 86, 565(1952).
$_{28}Ni^{59}_{31}$	$Co^{59}(p,n)$ ppl Level Rel. σ 0 0.28 0.33 0.72		P. H. Stelson, W. M. Preston, Phys. Rev. 86, 807(1952). $E_p = 3.3$.
$_{28}Ni^{60}_{32}$	Levels $Ni(p,p)$ 1.34 E_p=8 1.48 2.50		R. Ely, Jr. et al., Phys. Rev. 86, 859 (1952); 85, 704A (1952).
$_{28}Ni^{61}_{33}$	Level $Ni^{60}(d,p)$ 0.61* a		D. C. Hoesterey, Phys. Rev. 87, 216A(1952); *verbal report.
	$Zn^{64}(n,\alpha)$ 15 α tracks observed with th n's. $E_\alpha \sim 6.6$ ppl		H. Faraggi, R. Bernas, Compt. rend. 234, 1684 (1952).
$_{28}Ni^{64}_{36}$	$Zn^{67}(n,\alpha)$ 5 α tracks found with th n's. $E_\alpha \sim 7.5$ ppl		H. Faraggi et al., Compt. rend. 235, 425.
$_{28}Ni^{65}_{37}$	$\gamma\gamma(\theta)$ indicates dipole-quadrupole transitions		T. Wiedling, A. Carlsson, Phys. Rev. 83, 181(1951).
Cu	σ_a(th n) 3.57 osc		H. Pomerance, Phys. Rev. 83, 641(1951).
	σ_t(14 Mev) 2.5		L. S. Goodman, ANL-4602 (Mar. 1951).
	σ_t(14.2 Mev) 2.85		D. I. Meyer, W. Nyer, LA-1279 (July 1951).
	σ_t(156 Mev) 1.38		A. E. Taylor et al., Phil. Mag. 42, 751(1951).
	σ_t(400 Mev) 1.14		V. A. Nedzel, J. Marshall, Phys. Rev. 86, 604A(1952).
$_{29}Cu^{62}_{33}$	τ 9.8^m		H. C. Martin, B. C. Diven, Phys. Rev. 86, 565(1952). Cu(n,2n)
$_{29}Cu^{63}_{34}$	q -0.13 para $q(Cu^{63})/q(Cu^{65}) = 1.08$		B. Bleaney et al., Proc. Phys. Soc. (London) 64A, 758(1951).
	$q(Cu^{63})/q(Cu^{65}) = 1.0806$ I		H. Krüger, U. Meyer-Berkhout, Z. Physik 132, 171 (1952); Naturwiss. 38, 121(1951).
	d,n(θ) $Cu^{63}(d,n)$ I(ground) = $\frac{3}{2}$ + ?		L. Schecter, Phys. Rev. 83, 695(1951).
$_{29}Cu^{63}_{34}$	σ(n,γ) proportional to 1/E $E_n = 2.3-3.1$ Mev		S. Yamabe et al., J. Phys. Soc. Japan 7, 140(1952).
	$\sigma[Cu^{63}(n,2n)9.9^m Cu]$ Yield for $E_n \simeq 11-19$		H. C. Martin, B. C. Diven, Phys. Rev. 86, 565(1952).
$_{29}Cu^{64}_{35}$	τ 12.74^h pc		R. P. Schuman and A. Camilli, Phys. Rev. 84, 158(1951).
	γ 1.34 sl;ce$^-$ $\alpha_K \sim 1.3 \times 10^{-4}$		D. Brower et al., Phys. Rev. 86, 1054 (1952).
	$(1.34\gamma)/\beta^+ = 0.023$ a		H. T. Vlaar, A. H. W. Aten, Jr., Physica 18, 275 (1952).
	K Auger $e^-/\beta^+ = 1.2$		E. Plassman and F. R. Scott, Phys. Rev. 84, 156(1951).
	Levels $Cu^{63}(d,p)$ 0.51 a 0.84* 1.29		D. C. Hoesterey, Phys. Rev. 87, 216A(1952); *verbal report.
$_{29}Cu^{65}_{36}$	q -0.12 para		B. Bleaney et al., Proc. Phys. Soc. (London) 64A, 758(1951).
$_{29}Cu^{66}_{37}$	τ 5.2^m β^- 9% 1.59 sl 91% 2.63 γ 1.04 sl;ce$^-$ $\alpha < 3 \times 10^{-3}$		G. Friedlander and D. E. Alburger, Phys. Rev. 84, 231(1951). Cu(pile n,γ).
	τ 5.17 ± 0.07^m β^- 5.5% 1.6 scin;$\beta\gamma$ 94.5% 2.7 scin γ 1.05 scin $\beta\gamma$ delay $< 5 \times 10^{-9}$s		H. Roderick et al., Phys. Rev. 84, 887 (1951). Cu(slow n,γ).
	τ 5.12^m pc		R. P. Schuman and A. Camilli, Phys. Rev. 84, 158(1951).
	γ 1.05 scin		D. Maeder, P. Preiswerk, Helv. Phys. Acta 24, 625 (1951).
Zn	σ_t(14 Mev) 2.88		L. S. Goodman, ANL-4602 (Mar. 1951).
	Resonances (ev) E_0 $\sigma_0\Gamma^2$ 520 6.9×10^4 1100 2.3×10^4 3800 2.5×10^5		W. W. Havens, Jr., and L. J. Rainwater, Phys. Rev. 83, 1123(1951).
$_{30}Zn^{65}_{35}$	β^+ 0.32 sz $K/\beta^+ = 41$		T. Yuasa, Compt. rend. 235, 366 (1952).
	β^+ 2.5% $\gamma/X = 0.45$, no $\gamma\beta^+$		J. K. Major, Phys. Rev. 86, 631A(1952).
	$\gamma/\beta^+ = 65$ scin		G. M. Griffiths, Phys. Rev. 83, 852(1951).

$_{30}Zn^{65}_{35}$	Xγ show 44 ± 3% of K's go to 1.11 level	S. E. Furberg, Nature 168, 1005(1951).
$_{30}Zn^{67}_{37}$	I ½ I μ +0.87376 ±0.00013	S. S. Dharmatti, H. E. Weaver, Jr., Phys. Rev. 85, 927(1952).
$_{31}Ga^{66}_{35}$	γ st 1.05 pair 2.7% 1.39? scin 5.4% 1.93 8.1% 2.20 5.4% 2.41** 27.3%* 2.75 1.5% 3.21 2.7% 3.38 1.9% 3.79 2.2% 4.29 0.5% 4.43 0.8% 4.78 No γ with E_γ <1.0 (>0.8β^+)(γ)**	L. G. Mann, W. E. Meyerhof, Phys. Rev. 87, 202A(1952); **verbal report. Zn(p,n); chem. *Relative intensities; adjusted at this point for comparison with Mukerji and Preiswerk.
	β^+ 1.1%* 0.40 sl 4.5% 0.90 2.7% 1.38 56.0% 4.15 γ 35.0% 1.05 sl; 3.2% 1.7 pe$^-$, 4.5% 2.2 Cpt 27.3% 2.75 4.5% 3.3 2.0% (4.25) 2.0% (4.8) (1.05γ)(2.75γ) No (4.15β^+)(γ)	A. Mukerji, P. Preiswerk, Helv. Phys. Acta 25, 387 (1952). Zn(6.8 Mev p); chem. *K capture taken as 34%.
$_{31}Ga^{67}_{36}$	τ 77.9 ± 0.3^h	J. Tobailen, Compt. rend. 233, 1360(1951). Differential ic's.
	γ ~100%* 0.092 sl;ce$^-$, 1.3% 0.185 scin 0.2% 0.296 0.04% 0.378 No [e$^-$(0.092γ)][e$^-$(0.185γ)] No [e$^-$(0.092γ)][e$^-$(0.296γ)] $\gamma\gamma$	K. Siegbahn, Arkiv for Fysik 4, 223 (1952). Zn^{64}(d,n); chem. *Relative %'s of ce$^-$'s.
	I_γ* E_γ α_K γ_1 70% 0.092 0.28 γ_2 30% 0.182 0.0091 γ_3 2% 0.205 0.0055 γ_4 18% 0.298 0.0025 γ_5 4% 0.388 0.0017 sl;ce$^-$,pe$^-$ γ_1 K/L = 6.5 M1,E2 γ_2 K/L = 9 M1 (0.092γ)(γ) γ/X = 2.8	A. Mukerji, P. Preiswerk, Helv. Phys. Acta 25, 387 (1952). Zn(6.8 Mev p); chem. *Relative % transitions.
$_{31}Ga^{68}_{37}$	K 15%(calc) β^+ 3% 0.77 sl 82% 1.88 γ 10% 1.10	A. Mukerji, P. Preiswerk, Helv. Phys. Acta 25, 387 (1952). Zn(6.8 Mev p); chem.
$_{31}Ga^{69}_{38}$	q 0.189 Calc M with configuration interaction (unshielded)	G. F. Koster, Phys. Rev. 86, 148(1952).
$_{31}Ga^{71}_{40}$	q 0.119 Calc M with configuration interaction (unshielded)	G. F. Koster, Phys. Rev. 86, 148(1952).
Ge	σ_a(th n) 2.2 osc	J. Ailloud et al., J. phys. radium 13, 171(1952).
	σ_t(10.0 ev) 5.13 (19.5 ev) 4.08 (120 ev) 4.93 (345 + 2400 ev) 4.01 (2700 ev) 2.54 (3800 ev) 4.47	C. T. Hibdon, ANL-4602(Mar. 1951).
$_{32}Ge^{69}_{37}$	β^+ 2% 0.220 sl 10% 0.610 88% 1.215 γ 0.090 sl;pe$^-$ 0.388 1.120* 0.576* 1.340 0.870* 1.610 (1.215β)γ	C. M. Huddleston and A. B. Smith, Phys. Rev. 84, 289(1951). Ga(d,2n). *Relative intensities 44, 29, 100.
$_{32}Ge^{70}_{38}$	σ_a(th n) 3.3 osc	H. Pomerance, ORNL-577(1949); Phys. Rev. 78, 814(1950).
$_{32}Ge^{72}_{40}$	σ_a(th n) 0.94 osc	H. Pomerance, ORNL-577(1949); Phys. Rev. 78, 814(1950).
$_{32}Ge^{73}_{41}$	σ_a(th n) 13.7 osc	H. Pomerance, ORNL-577(1949); Phys. Rev. 78, 814(1950).
$_{32}Ge^{74}_{42}$	σ_a(th n) 0.60 osc	H. Pomerance, ORNL-577(1949); Phys. Rev. 78, 814(1950).
$_{32}Ge^{75}_{43}$	τ 42^s γ 0.15 a α = 2	A. Flammersfeld, Z. Naturforsch. 7a, 295(1952). As(n); Ge(fast and slow n).
$_{32}Ge^{76}_{44}$	σ_a(th n) 0.35 osc	H. Pomerance, ORNL-577(1949); Phys. Rev. 78, 814(1950).
$_{32}Ge^{77}_{45}$ 59^s	γ 0.380 scin	A. C. G. Mitchell, A. B. Smith, Phys. Rev. 85, 153(1952). Ge(slow n).
	β^- 2.2 complex s γ 0.263 s	A. C. G. Mitchell, A. B. Smith, Phys. Rev. 85, 153(1952).
	β^- 23% 0.710 sl 35% 1.379 42% 2.196 γ 0.042 sl;pe$^-$,ce$^-$ 0.073 0.327 0.466 0.213 0.368 0.564 0.264 0.408 1.105 0.300 0.418 ~1.75 (2.196β)(γ) (0.073γ)(0.264γ) (0.213γ)(0.264γ)	A. B. Smith, Phys. Rev. 86, 98(1952). Ge(d); chem.

As	σ_t(2700 ev) 7.35 (3000 ev) 6.77		C. T. Hibdon, ANL-4602 (Mar. 1951).
	Resonances E_0 46 ev ~95 ?		S. P. Harris, L. M. Bollinger, Phys. Rev. 87, 222A (1952).
$_{33}As^{70}_{37}$	52^m activity not produced by Ge^{70}(6.3 Mev p,n)		C. J. Avery et al., Phys. Rev. 87, 216A(1952).
$_{33}As^{71}_{38}$	τ ~50^h		D. F. Bracher, A. R. Crathorn, Nature 169, 364(1952). Ge(d,n); ms.
$_{33}As^{73}_{40}$	γ 84%* 0.0135 sl;ce$^-$ K : L : M = <0.5 : 1 : 0.19 100%* 0.0539 K : L+M = 1 : 0.18 ~0.1%* ~0.081? [e^-(0.0135γ)][e^-(0.0539γ)] rate suggests 0.0539γ delayed		S. Johansson, Arkiv för Fysik 4, 273 (1952). Ge(6 Mev d); chem., ms. *Relative %'s of ce$^-$'s.
$_{33}As^{75}_{42}$	I ½ I μ +1.4354 I		C. D. Jeffries et al., Phys. Rev. 85, 478(1952).
	μ 1.4351 I		S. S. Dharmatti and H. E. Weaver, Jr., Phys. Rev. 84, 367(1951).
	μ 1.44 I		H. Krüger, U. Meyer-Berkhout, Z. Physik 132, 221 (1952).
$_{33}As^{76}_{43}$	γ 1.0* 0.555 sl; 0.095* 0.648 pe$^-$, 0.25* 1.21 Cpt 0.016* 1.41 0.055* 2.06		P. Hubert, J. phys. radium 12, 823 (1951). *Relative intensity.
	$\beta\gamma(\theta)$ b = 0.04 – 0.07		S. L. Ridgway, F. M. Pipkin, Phys. Rev. 87, 202A(1952).
$_{33}As^{79}_{46}$	β^- ~2.1 a No γ		P. J. Van der Haack et al., Physica 18, 20(1952). Se(n), Se(d); chem.
Se	σ_a(0.0017 ev) 2 σ_t(0.0017 ev) 4		P. A. Egelstaff, Nature 168, 290(1951).
$_{34}Se^{73}_{39}$	τ 7.08^h β^+ 1.1% 0.250 sπ 10.3% 0.750 87.4% 1.318 1.2% 1.680 γ 0.0671 ce$^-$,pe$^-$ K/L = 7.6 0.361 ce$^-$,pe$^-$ K/L = 8.6 0.860 pe$^-$ 1.310 Cpt		F. R. Scott, Phys. Rev. 84, 659(1951).
$_{34}Se^{74}_{40}$	σ_a(th n) 44 osc		H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{34}Se^{76}_{42}$	σ_a(th n) 82 osc		H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{34}Se^{77}_{43}$ 17.5^s	τ 17.5^s γ 0.162 sπ;ce$^-$ K/L = 4.6 E3 No other γ		W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Se^{76}(n,\gamma)$.
stable	I ½ B		S. P. Davis, F.A. Jenkins, Phys. Rev. 83, 1269(1951).
	μ +0.53326 ±0.00005		S. S. Dharmatti, H. E. Weaver, Jr., Phys. Rev. 86, 259(1952).
	σ_a(th n) 40 osc		H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{34}Se^{78}_{44}$	I 0 B		S. P. Davis, F. A. Jenkins, Phys. Rev. 83, 1269(1951).
$_{34}Se^{79}_{45}$ 3.9^m	τ_1 3.5^m γ 0.096 sπ;ce$^-$ K/L = 2.9 E3		W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Se^{78}(n,\gamma)$.
6.5×10^4y	I ½ Mic q 1.2		W. A. Hardy et al., Phys. Rev. 85, 494(1952). Fission; chem.
$_{34}Se^{81}_{47}$ 59^m	τ_1 58^m γ 0.103 sπ;ce$^-$ K/L = 3.0 E3		W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Se^{80}(n,\gamma)$.
17^m	τ_2 17^m β^- 1.5 sπ No γ		W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Se^{80}(n,\gamma)$.
$_{34}Se^{83}_{49}$ 67^s	τ_1 69^s No γ		W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Se^{82}(n,\gamma)$.
25^m	τ_2 26^m β^- 1.5 a γ 0.176 scin 0.950 scin		W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Se^{82}(n,\gamma)$.
Br	Resonances (ev) E_0 σ_0 Γ 35.7 9000* 0.15* 54 6000* 0.15* 104 4700** 0.24** 136 4800* 0.45*		W. W. Havens, Jr., and L. J. Rainwater, Phys. Rev. 83, 1123(1951). *Assuming $\Gamma_n \approx \Gamma_\gamma$. **Assuming $\Gamma_n \approx 3\Gamma_\gamma$.
$_{35}Br^{74?}_{39}$	τ 35^m long-lived or stable daughter		J. M. Hollander, UCRL-1396 (July 1951). Cu(C,3n); chem.
$_{35}Br^{75?}_{40}$	τ 95^m β^+ ~1.8 a		J. M. Hollander, UCRL-1396 (July 1951). Cu(C,2n); chem.
$_{35}Br^{75}_{40}$	β^+ 19% 0.3 sπ 15% 0.6 20% 0.8 46% 1.70		S. C. Fultz, M. L. Pool, Phys. Rev. 86, 347(1952); 86, 631A (1952). $Se^{74}(p,\gamma)$.

$_{35}Br^{76}_{41}$	τ	16.5^h		J. M. Hollander, UCRL-1396 (July 1951). As(33 Mev α,3n); chem.
	β^+	3.5	s	
	τ	17.2^h		S. C. Fultz, M. L. Pool, Phys. Rev. 86, 347(1952); 86, 631A(1952). Se^{76}(7.3 Mev p,n); chem.
	β^+ 19%	0.6	sπ	
	14%	0.8		
	11%	1.1		
	10%	1.7		
	46%	3.57		
	γ	0.25 0.68	pe^-;	
		0.33 0.75	ce^-	
		0.37 0.96		
		0.42 1.21		
	No (3.57 β^+)γ			
$_{35}Br^{77}_{42}$	τ	58^h		S. C. Fultz, M. L. Pool, Phys. Rev. 86, 347(1952); 86, 631A (1952).
	γ	0.160 0.299	sπ;	
		0.234 0.521	ce^-	
	Xγ, no $\beta^+\gamma$			
	β^+	0.336	sπ	R. Canada, A. C. G. Mitchell, Phys. Rev. 83, 955(1951). As(α,2n). *Relative intensities from pe^-'s.
	γ 0.64*	0.160	ce^-,pe^-	
	20	0.237	ce^-,pe^-	
	0.22	0.284	pe^-	
	0.25	0.298	pe^-	
	100	0.520	ce^-,pe^-	
	8.6	0.641	pe^-	
	25	0.813	pe^-	
	τ	57^h		J. M. Hollander, UCRL-1396 (July 1951). As(24 Mev α,2n); chem.
	β^+	0.4	s	
	e^-	0.35	s	
	γ	~0.3,~0.8		
$_{35}Br^{79}_{44}$	q	+0.30	I	H. G. Dehmelt, Z. Physik 130, 480(1951).
	q	+0.31	Mic	W. Gordy, J. Chem. Phys. 19, 792(1951).
	$q(Br^{79})/q(Br^{81})$ = 1.1970			H. G. Dehmelt and H. Krüger, Z. Physik 129, 401(1951).
	$q(Br^{79})/q(Br^{81})$		Mic	S. J. Tetenbaum, Phys. Rev. 86, 440 (1952). *Ground, **first excited vibrational states.
	(000)*	1.199		
	(010)**	1.197		
	[J = 5 → 6, BrCN]			
$_{35}Br^{80}_{45}$ 4.4^h	γ	(0.049)		W. H. Hamill, J. A. Young, J. Chem. Phys. 20, 888(1952).
		$\alpha \geq 50$	chem	
	γ	(0.049)	s;ce	J. W. Mihelich, Phys. Rev. 87, 646 (1952).
		L_I/L_{III} = 1 (M3)		
18^m	β_1 85%	2.0	sl	J. Laberrigue-Frolow, Compt. rend. 234, 2599 (1952).
	β_2 (?) 15%	1.1		
	No ce^-, no $\beta\gamma$			
	β^- 9%	0.7	sπ	S. C. Fultz, M. L. Pool, Phys. Rev. 86, 347(1952); 86, 631A (1952). Se(p), Se(d).
	11%	1.1		
	80%	1.97		
	No (1.97 β^-)γ			
$_{35}Br^{81}_{46}$	q	+0.25	I	H. G. Dehmelt, Z. Physik 130, 480(1951).
	q	+0.26	Mic	W. Gordy, J. Chem. Phys. 19, 792(1951).
$_{35}Br^{83}_{48}$	β^-	0.94	sπ	S. C. Fultz, M. L. Pool, Phys. Rev. 86, 347(1952); 86, 631A (1952). Se(d).
	γ	(0.046)	(βe^-)cc	J. Walker, Proc. Phys. Soc. (London) A65, 449 (1952).
		$\tau < 10^{-2s}$		
Kr	Relative abundances		ms	O. A. Schaeffer, J. Chem. Phys. 168, 18(1950). Used magnetic scanning.
	78 0.353%			
	80 2.29%			
	82 11.58%			
	83 11.51%			
	84 56.95%			
	86 17.31%			
$_{36}Kr^{79}_{43}$	τ	34.5^h	ic	P. Radvanyi, Compt. rend. 234, 1275(1952).
	Auger e^-/β^+ = 6		cc	P. Radvanyi, Compt rend. 235, 289 (1952).
	L Auger e^-/K Auger e^- = 1.68		cc	P. Radvanyi, Compt rend. 235, 428 (1952).
$_{36}Kr^{83}_{47}$ 1.9^h	γ_1	0.009	pc	P. T. Barrett, Proc. Phys. Soc. (London) A65, 450 (1952). Se(d); chem.
		α~10		
		$\tau < 10^{-7s}$		
	γ_2	0.032	pc	
		K/L + M = 0.32		
$_{36}Kr^{87}_{51}$	β^- 25%	1.27	sl	S. Thulin, Phys. Rev. 87, 684(1952). Fission; ms.
	75%	3.63		
	γ	0.405	scin	
		1.89		
		~2.3		
Rb	Resonances			R. H. Rohrer, Phys. Rev. 87, 177A (1952).
	E_0(ev)	Isotope		
	600	87		
	970	85		
	No measurable amount of Kr found in old Rb ores. K/β^- <1/40,000.			E. K. Gerling and N. V. Baranovskaya, Doklady Akad. Nauk S.S.S.R. 76, 825(1951), in Guide to Russ. Sci. Period. Lit. 4, 203(1951).
$_{37}Rb^{82}?$ short	τ	short		S. V. Castner, UCRL-942(1950). All radiations observed in decay of 25.5^d Sr.
	β^+	3.15	s$\pi\sqrt{2}$	
	γ	~0.15	s,a	
		~0.40	s	
		0.95	a	
$_{37}Rb^{83}_{46}$	γ	~0.15	s	S. V. Castner, UCRL-942(1950). d 38^h Sr.
		~0.45	s	
		0.8	a	
	p 1.9^h Kr			
$_{37}Rb^{85}_{48}$	μ	1.3486	I	H. E. Walchli et al., Phys. Rev. 85, 922 (1952).

$_{37}Rb^{86}_{49}$ 1.06^m	τ 1.06^m γ 0.78 K X-rays?		A. Flammersfeld, Z. Naturforsch. 6a, 559(1951). Rb (slow and fast n).
19.5^d	I 2 M μ (−?)1.68 M		E. H. Bellamy, Nature 168, 556(1951).
	β^- 1.785 s $\Delta I = 2$, yes shape		J. Moreau, J. Perez y Jorba, Compt. rend. 235, 38(1952).
	$\beta\gamma(\theta)$ b = +0.13		D. T. Stevenson, M. Deutsch, Phys. Rev. 83, 1202(1951).
$_{37}Rb^{87}_{50}$	τ $(7.6 \pm 0.4) \times 10^{10}$y		G. Charpak, F. Suzor, Compt. rend. 233, 1356(1951).
	τ 6.2×10^{10}y β^- 0.275 pc No ce$^-$ or X-rays		S. C. Curran et al., Phys. Rev. 84, 151(1951); Phil. Mag. 42, 82(1952).
	τ $6.38 \pm 0.3 \times 10^{10}$y for 27.85%* abundance No βe^-		M. H. MacGregor, M. L. Wiedenbeck, Phys. Rev. 86, 420 (1952). *A. O. Nier, Phys. Rev. 79, 450(1950).
$_{37}Rb^{88}_{51}$	β^- ~65% 5.2 a ~16% 3.6 a$\beta\gamma$ ~19% 1.8 a$\beta\gamma$ γ 1* 3.0 a;pe$^-$ 10* 1.7		K. Geiger, Ann. Physik 9, 293(1951). No $(5.2\beta^-)\gamma$. $\beta\gamma,\gamma\gamma$. *Relative intensities.
Sr	Resonance Sr(n,γ) E_0 3.5 ev		E. B. Meservey et al., Phys. Rev. 86, 605A (1952).
	No X-ray resonance absorption, ~30 – 100 kev		R. H. McFarland, Phys. Rev. 83, 666 (1951).
$_{38}Sr^{81}_{43}$	τ 29^m p 4.7^{h}Rb; 13^{s}Kr		S. V. Castner, UCRL-942(1950). Rb(60 Mev p); chem.
$_{38}Sr^{82?}_{44}$	τ 25.5^d Not p 6.3^{h}Rb For possible γ's see Rb$^{82?}$		S. V. Castner, UCRL-942(1950). Rb(40 Mev p); chem.
$_{38}Sr^{83}_{45}$	τ 38^h β^+ 1.15 s$\pi\sqrt{2}$ γ's 0.040 0.151 ce$^-$ 0.074 0.165 0.101 p 107^{d}Rb, 1.9^{h}Kr		S. V. Castner, UCRL-942(1950). Rb(25 Mev p); chem.
$_{38}Sr^{85}_{47}$ 70^m	K 14% γ 84.7% 0.0075 E3 α = large 0.150 84.7% 0.225 M1 α_K ~0.026 K/L~5 1.3% 0.233 M4 (0.150γ)X (Rb) No (0.233γ)X sl;ce$^-$,scin		A. W. Sunyar et al., Phys. Rev. 86, 1023(1952); 85, 734A(1952). Sr^{84}(pile n).
$_{38}Sr^{85}_{47}$ 65^d	γ 0.514 s;ce$^-$,pe$^-$ α_K = 0.007, K/L ~12 $\tau > 1^{\mu s}$ No e$^-$ with 0.12 < E < 0.2 X/γ ~1		W. S. Emmerich, J. D. Kurbatov, Phys. Rev. 85, 149 (1952); 85, 733A (1952).
	K γ 100% 0.513 α = 0.008 M2 $\tau = 0.9^{\mu s}$ sl;ce$^-$,scin		A. W. Sunyar et al., Phys. Rev. 86, 1023(1952); 85, 734A(1952). Rb(d); chem.
$_{38}Sr^{87}_{49}$ 2.75^h	τ 2.80^h γ 0.390 sl;ce$^-$ α_K = 0.28 K/L + M = 6.9 e$^-$X coincidences only		L. G. Mann and P. Axel, Phys. Rev. 84, 221(1951). d 80^{h}Y.
	γ 0.388 s$\pi\sqrt{2}$ K/L + M = 5.5		W. L. Bendel et al., Phys. Rev. 87, 195A(1952). Sr(γ,n).
Y	Resonance E_0 ~5000 ev		R. H. Rohrer, Phys. Rev. 87, 177A (1952).
$_{39}Y^{87}_{48}$ 14^h	τ_1 14^h γ 0.384 sl;ce$^-$ α_K = 0.24 e$^-$X coincidences No γ's with E_γ > 1		L. G. Mann and P. Axel, Phys. Rev. 84, 221(1951). Sr(10 Mev d,n); chem.
80^h	τ_2 80.0^h β^+ 0.3% ~0.7 sl γ 0.485 sl;ce$^-$ α_K = 0.0032 γX coincidences		L. G. Mann and P. Axel, Phys. Rev. 84, 221(1951). Sr(10 Mev d,n); chem.
$_{39}Y^{89}_{50}$ 14^s	τ_1 14^s γ 0.92 scin α = 0.01 M4		M. Goldhaber et al., Phys. Rev. 83, 661 (1951). Y(fast n); d 80^{h}Zr; chem.
	τ_1 13^s γ 0.913 ce$^-$,scin d 80^{h}Zr		F. J. Shore et al., Phys. Rev. 83, 688 (1951).
	γ 0.913 s$\pi\sqrt{2}$ K/L + M = 7.0		W. L. Bendel et al., Phys. Rev. 87, 195A(1952).
$_{39}Y^{90}_{51}$	β^- 2.27 s $\Delta I = 2$, yes shape		J. Moreau, J. Perez y Jorba, Compt. rend. 235, 38(1952).
	$\bar{E}_{\beta^-}$ 0.90 ± 0.04 ic		R. S. Caswell, Phys. Rev. 86, 82(1952).
$_{39}Y^{91}_{52}$ 57^d	β^- 1.56 s $\Delta I = 2$, yes shape		J. Moreau, J. Perez y Jorba, Compt. rend. 235, 38(1952).
Zr	σ_a(th n) 0.18 osc		H. Pomerance, Phys. Rev. 83, 641(1951).
	σ_t(19.5 ev) 6.23 (120 ev) 6.30 (345 + 2400 ev) 5.83 (2700 ev) 6.03 (3000 ev) 6.23		C. T. Hibdon, ANL-4602 (Mar. 1951).

$_{40}Zr^{89}_{49}$ 4.5^m	$\tau_{\frac{1}{2}}$	4.4^m		F. J. Shore et al., Phys. Rev. 83, 688 (1951). *Relative intensities.
	β^+ 0.36%*	~2.5	sπ	
	γ 100%*	0.588	ce$^-$ scin	
	α_K ~0.06	K/L + M	~7	
	γ	(0.588)	sπ$\sqrt{2}$	W. L. Bendel et al., Phys. Rev. 87, 195A(1952). Zr(γ,n).
		K/L + M = 5.4		
	β^+	0.85	a	F. J. Shore et al., Phys. Rev. 87, 202A(1952). Zr(γ,n). *Relative to 0.588γ.
	γ ~7%*	1.53	scin	
	(β^+)(>0.6γ)			
80.1^h	β^+	0.890	sπ	F. J. Shore et al., Phys. Rev. 83, 688 (1951).
	p 13^{s}Y			
	K, β^+ to 14^{s}Y daughter			M. Goldhaber et al., Phys. Rev. 83, 661 (1951).
	K/β^+ ~3			
	0.92 γ in 14^{s}Y			
	No other γ's		s,scin,pc	
$_{40}Zr^{91}_{51}$	μ	−1.1	S	S. Suwa, Phys. Rev. 86, 247(1952).
$_{40}Zr^{95}_{55}$	β^- 95%	0.37	s	V. S. Shpinel, Zhur. Eksptl'. i Teoret. Fiz. 21, 1370(1951); Phys. Abs. 55, 6005 (1952).
		0.60		
		1.10		
	γ	0.73	s;pe$^-$	
$_{40}Zr^{96}_{56}$	$\tau_{\beta\beta}$	>10^{17y}*		J. A. McCarthy, Phys. Rev. 87, 194A(1952); *verbal report.
$_{40}Zr^{97}_{57}$	τ	17.0^h		C. E. Mandeville et al., Phys. Rev. 86, 631A(1952). Zr^{96}(pile n); chem.
	β^-	2.50	a	
	γ	0.74	a	
		1.42	a coin	
$_{41}Nb^{90}_{49}$	γ	0.14	scin	G. E. Boyd, ORNL-1053 (Mar. 1951). Mo(d,α).
		1.14		
		2.23		
$_{41}Nb^{91}_{50}$ 64^d	τ	62^d		P. Preiswerk, P. Stähelin, Helv. Phys. Acta 24, 300 (1951).
	γ	0.105		
		K/L + M = 2.1		
$_{41}Nb^{92}_{51}$	K >99.95%			P. Preiswerk, P. Stähelin, Helv. Phys. Acta 24, 300 (1951).
	β ≤0.05%			
	γ >99.95%	0.930		
	γ weak	0.20	scin	G. E. Boyd, ORNL-1053 (Mar. 1951). Mo(d,α).
		0.91		
		follows K		
	γ	0.933	scin	H. K. Ticho et al., Phys. Rev. 86, 422 (1952), priv. comm. Nb^{93}(20 Mev p); chem.
	vw	1.84		
$_{41}Nb^{94}_{53}$ 6.6^m	γ	0.9	scin	E. der Mateosian, Phys. Rev. 83, 223A (1951).
long	$\tau_{\frac{1}{2}}$	>5 ×10^{4y}		R. E. Hein et al., Phys. Rev. 85, 138 (1952).
$_{41}Nb^{95}_{54}$ 90^h	τ	80^h		P. Preiswerk, P. Stähelin, Helv. Phys. Acta 24, 300 (1951).
	γ 0.232		sl;pe$^-$	
		K/L + M = 3.5		
35^d	β^-	0.160	sl	C. Y. Fan, Phys. Rev. 87, 252(1952).
	γ	0.77	ce$^-$	
		α_K = 0.0016		
		E2,M1		
		K/L~4		
	β^- 100%	0.15	s	V. S. Shpinel, Zhur. Eksptl'. i Teoret. Fiz. 21, 1370(1951); Phys. Abs. 55, 6005(1952).
	γ 100%	0.74	pe$^-$	
$_{41}Nb^{96}_{55}$	τ	23^h		P. Preiswerk, P. Stähelin, Helv. Phys. Acta 24, 300 (1951).
	β^- 8%	0.370	sl	
	92%	0.750		
	γ		sl;ce$^-$	

I(%)	E_γ	$\alpha \times 10^4$
7	0.216	<230
10	0.238	<160
27	0.451	40
61	0.560	16
5	0.725?	?
100	0.770	12
6	0.804	13
16	0.840	12
52	1.078	5.6
32	1.187	3.1

	β^- 8%	0.37	sπ
	92%	0.69	
	γ	0.455	pe$^-$
		0.545	pe$^-$
		0.745	ce$^-$,pe$^-$
		0.9	pe$^-$
		1.045	ce$^-$,pe$^-$
		1.1	ce$^-$
$_{41}Nb^{97}_{56}$ 76.0^m	τ	72.1^m	
	β^-	1.4	a
	γ	~0.7	a
	$\beta\gamma$ not function of E_β		
Mo	σ_a(0.0017 ev)	<0.3	
	σ_t(0.0017 ev)	<0.3	
	σ_t(0.01 − 1.23 Mev)	graph	
	σ_t(14 Mev)	3.6	
$_{42}Mo^{91}_{49}$	Mo(γ,n)		
	threshold (15.5^m) = 13.2		
	threshold (75^s) = 13.1		
$_{42}Mo^{93}_{51}$ 6.75^h	γ	0.262	sl;ce$^-$
		K/L* = 2.9	
		0.687	sl;pe$^-$
		0.692	ce$^-$
		1.51	pe$^-$
	(0.24e$^-$) $\gamma(\theta)$	b = +0.33	
	$\gamma\gamma(\theta)$	b = +0.20	
<2^y		Nb^{93}(p,n)	
	n's first observed for E_p = 2.68		

D. T. Stevenson, M. Deutsch, Phys. Rev. 83, 1202(1951).

H. B. Willard et al., ORNL-1278, Dec. 1951.

$_{42}Mo^{96}_{54}$	σ_a(th n)	1.2	osc	H. Pomerance, priv. comm. (1952).
$_{42}Mo^{97}_{55}$	σ_a(th n)	2.1	osc	H. Pomerance, priv. comm. (1952).
$_{42}Mo^{98}_{56}$	σ_a(th n)	0.38	osc	H. Pomerance, priv. comm. (1952).
$_{42}Mo^{99}_{57}$	β^-	1.25	sπ	N. Marty-Wollman, Ann. Phys., 6, 662(1951). *Relative intensities of photons from pe^-. See also Tc^{99}.
	γ ~20*	0.139	sπ;	
	~10	0.745	pe^-	
	~5	0.780	Cpt	
	~3	0.850		
$_{42}Mo^{100}_{58}$	σ_a(th n)	0.5	osc	H. Pomerance, priv. comm. (1952).
	σ(th n,γ)14.6^{m}Mo	0.23		V. Hummel, ANL-4659 (June 1951).
$_{42}Mo^{101}_{59}$	β^-	1.2	sπ	W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). Mo(n,γ).
		2.1		
	γ	0.191	sπ;ce^-	
		K/L~6		
		0.960	scin	
	γ	0.150	scin	E. der Mateosian, Phys. Rev. 83, 223A (1951).
$_{43}Tc^{93}_{50}$	β^+	0.800	sl	G. E. Boyd, B. H. Ketelle, Phys. Rev. 83, 216A(1951).
	γ	1.32	scin	
	(1.32γ)β^+			
$_{43}Tc^{94}_{51}$	51.5^m activity now assigned to Tc^{96}, q.v.			H. A. Medicus, H. T. Easterday, Phys. Rev. 85, 735A(1952).
$_{43}Tc^{96}_{53}$ 62^d	γ	0.202*	scin	G. E. Boyd, B. H. Ketelle, Phys. Rev. 83, 216A(1951) and *verbal report.
		0.578*		
		0.804*		
		1.028*		
20.0^h	γ	0.76	scin	G. E. Boyd and B. H. Ketelle, ORNL-1053 (Mar. 1951). Mo(d).
		1.07		
	0.93γ not found			
$_{43}Tc^{96}_{53}$	τ_1	51.5^m		H. A. Medicus, H. T. Easterday, Phys. Rev. 85, 735A(1952). Mo^{96}(4-Mev p,n).
	Formerly assigned to Tc^{94}			
	Γ(0.8 level) $\leq$ 0.02 ev		scin	F. R. Metzger, Phys. Rev. 83, 842(1951).
	τ(0.8 level) $\geq 0.5\times10^{-13}$s			
$_{43}Tc^{96m}_{53}$	τ	42^m		R. A. House et al., Phys. Rev. 86, 654A(1952). Mo^{97}, Mo^{98}(6.3 Mev p).
	K ~50%			
	β^+ ~50%	2.1	a	
	γ	0.2	ce^-,a	
		0.86	a	
	2.8^d activity not confirmed			
$_{43}Tc^{99}_{56}$ 5.9^h	τ dependent on chemical state			K. T. Bainbridge et al., Phys. Rev. 84, 1260(1951).
	γ	0.0020	sl	H. Schneider et al., Helv. Phys. Acta 25, 259(1952).
	e^-(0.002γ) e^-(0.141γ)			
	γ	0.139	sπ;ce^-	N. Marty-Wollman, Ann. Phys., 6, 662(1951).
		K/L~10		
$_{43}Tc^{99}_{56}$ 5.9^h	γ	(0.140)	s;ce^-	J. W. Mihelich, Phys. Rev. 87, 646 (1952).
		L_I/L_{III}>10 (M1)		
3×10^{5}y	μ	+5.6586	I	H. Walchli et al., Phys. Rev. 85, 479(1952).
	β^-	0.296	sl	F. Wagner, M. S. Freedman, Phys. Rev. 86, 631A(1952).
	β^-	0.290	s	L. Feldman, C. S. Wu, Phys. Rev. 87, 1091(1952).
	C_{2T} fits spectral shape			
$_{43}Tc^{100}_{57}$	τ	15.8^s		G. E. Boyd et al., Phys. Rev. 86, 1051(1952). Tc^{99}(th n).
	β^-	2.8	a	
	γ			
	80^s activity due to F^{17}			
	τ	≥7.5^s		R. A. House et al., Phys. Rev. 86, 654A(1952). Mo^{100}(6.3 Mev p).
	β^-	2.4	a	
	γ's			
	80^s activity not found			
$_{43}Tc^{101}_{58}$	β^-	1.3	sπ	W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). Mo(n,$\gamma\beta$).
	γ	0.307	sπ;ce^-	
		K/L~6		
	No other γ			
	($1.3\beta^-$)(0.307γ)			
	β^-	1.20	sl	G. E. Boyd, B. H. Ketelle, Phys. Rev. 83, 216A(1951) and *verbal report.
	γ st	0.300*	scin	
	w	0.556*		
	w	0.734*		
	w	0.856?*		
	($1.20\beta^-$)(0.30γ)			
	γ	0.260	scin	E. der Mateosian, Phys. Rev. 83, 223A (1951).
$_{44}Ru^{94}_{50}$	τ	57^m		A. van der Wiel, A. H. Aten, Physica 18, 356(1952). Mo(α); chem.
	p 54^{m}Tc(2.7β^+)			
$_{44}Ru^{103}_{59}$	τ	39.8^d		E. Kondaiah, Arkiv för Fysik 4, 81 (1952); Phys. Rev. 79, 891(1950). Ru(pile n).
	β_1^- ~99%	0.217	s	
	β_2^- ~1%	0.70		
	γ	0.498	ce^-,pe^-	
		α~0.01		
	(β_1^-)(0.498γ)			
	No (β^-)[e^-(0.040γ)]; no $\gamma\gamma$			
	γ's		sπ,ce^-	J. M. Cork et al., Phys. Rev. 86, 575 (1952).
	E_γ	K/L		
	0.0396	0.10		
	0.0529	1.0		
	0.295 ?			
	0.498	8		
	0.611	4		
	γ	0.4979	sπ√2;	A. W. Knudsen, Phys. Rev. 86, 571 (1952).
		±0.0008	pe^-	
	γ	0.52	scin	V. O. Eriksen et al., Physica 18, 91(1952).
$_{44}Ru^{105}_{61}$	β^-	1.15	sπ	C. L. Scoville et al., Phys. Rev. 85, 1046 (1952). Ru(10-Mev d).
	γ	0.13	sπ;ce^-	

$_{45}Rh^{99}_{54}$	τ 4.5^h β^+ 0.74 sπ No γ	C. L. Scoville et al., Phys. Rev. 85, 1046 (1952). Ru(6.3 Mev p).
$_{45}Rh^{101}_{56}$	τ 4.5^d γ 0.15 sπ;ce$^-$ 0.30	C. L. Scoville et al., Phys. Rev. 85, 1046 (1952). Ru(p).
$_{45}Rh^{103}_{58}$ 57^m	γ 0.040 s;ce$^-$ $\alpha \sim \infty$ K/LM~0.2 E3 ?	E. Kondaiah, Arkiv för Fysik 4, 81 (1952); Phys. Rev. 79, 891(1950).
stable	I ½ S μ ~-0.1 S	H. Kuhn, G. K. Woodgate, Proc. Phys. Soc. (London) A64, 1090(1951).
$_{45}Rh^{104}_{59}$ 44^s	γ 0.56 scin w 1.1	D. Maeder, P. P Preiswerk, Helv. Phys. Acta 24, 625(1951).
$_{45}Rh^{105}_{60}$ 36^h	β^- 0.57 sπ	C. L. Scoville et al., Phys. Rev. 85, 1046 (1952). Ru(10-Mev d).
	β^- 10% 0.26 aβγ γ 0.080 ? scin vw 0.157 10% 0.322 (0.26β)(0.322γ)	G. E. Boyd, Phys. Rev. 86, 578(1952). Ru(pile n); chem.
$_{45}Rh^{106}_{61}$	β^- 3% 2.0 sl 12% 2.44 11% 3.1 68% 3.53	D. E. Alburger, Phys. Rev. 85, 734A(1952). *Relative intensities from pe$^-$. **Priv. comm.
	γ 1* 0.513 sl;pe$^-$ $\alpha_k = 3.5\times10^{-3}$, K/L = 8 0.53* 0.624 $\alpha_k = 2.1\times10^{-3}$ 0.03* 0.87 0.08* 1.045 0.025* 1.55 0.01** 2.41**	
	(0.624γ)(0.513γ)(θ) consistent with I = 0,2,0 (1.045γ)(0.513γ)(θ) suggests I(1.55 level) = 2	G. B. Arfken et al., Phys. Rev. 86, 413 (1952).
	γγ(θ) independent of chemical state	R. M. Steffen, Phys. Rev. 86, 632A(1952).
Pd	Resonances Pd(slow n) E_0 12.5, 31 ev	H. H. Landon, V. L. Sailor, Phys. Rev. 86, 605A(1952).
$_{46}Pd^{105}_{59}$	τ 23^s γ 0.23 a α = 0.4	A. Flammersfeld, Z. Naturforsch. 7a, 295(1952). Pd(fast n).
stable	I 5/2 S μ −0.6 S	P. Brix, A. Steudel, Naturwissenschaften 38, 431(1951).
$_{46}Pd^{108}_{62}$	$\tau_{\beta\beta}$ >1.1 × 10^{18} cc	R. G. Winter, Phys. Rev. 85, 687(1952).
$_{46}Pd^{109}_{63}$?	τ 4.8^m γ 0.19 a α = 0.6	A. Flammersfeld, Z. Naturforsch. 7a, 295(1952). Pd(fast and slow n) Ag(n); chem.
$_{46}Pd^{110}_{64}$	$\tau_{\beta\beta}$ >6 × 10^{17} y cc	R. G. Winter, Phys. Rev. 85, 687(1952).
$_{46}Pd^{111}_{65}$ 5.5^h	τ 5.5^h I.T. 75% β^- 25% γ 0.16 scin 1.77 p 7.5^{d}Ag	C. L. McGinnis, Phys. Rev. 87, 202A(1952); priv. comm. Pd(20 Mev d); chem.
26^m	τ 22^m β^+ 60% 2.15 sl γ 0.38 scin 0.56 0.65 0.73	C. L. McGinnis, Phys. Rev. 87, 202A(1952); priv. comm. Pd(20 Mev d); chem.
Ag	σ_a(th n) 5.72	C. T. Hibdon, ANL-4602 (Mar. 1951).
	No X-ray resonance absorption, 80 – 100 kev	R. H. McFarland, Phys. Rev. 83, 666 (1951).
$_{47}Ag^{105}_{58}$	γ's sl;ce$^-$ γ_1 0.0625 K/L>5 γ_2 0.280 K/L = 8 γ_3 0.343 K/L = 5.8 γ_4 0.440 K/L = 7 Weak: 0.154, 0.181, 0.391 $\gamma_1\gamma_2$, $\gamma\gamma$	R. W. Hayward, Phys. Rev. 85, 760A(1952); priv. comm. Rh(α,2n); Pd(d).
$_{47}Ag^{106}_{59}$ 8.6^d	γ's sl,ce$^-$ 0.220 0.717 0.409 0.815 0.511 1.04 K/L = 8 1.235 0.620 1.55 $\gamma\gamma$	R. W. Hayward, Phys. Rev. 85, 760A(1952); priv. comm. Rh(α,n); Pd(d).
24.5^m	τ 24.0^m β^+ 29% 1.5 sπ 71% 1.94 β^-(?) 2% 0.4 ce$^-$ weak 0.5 γ's >0.6 scin,a	W. L. Bendel et al., Phys. Rev. 83, 677 (1951). Ag(γ,n).
$_{47}Ag^{107}_{60}$ 44^s	No ce$^-$ from 1 to 10 kev sl;e$^-$e$^-$	H. Schneider et al., Helv. Phys. Acta 25, 259(1952).
stable	σ(n,γ)2.3^m Ag proportional to 1/E E_n = 2.3 – 3.1 Mev	S. Yamabe et al. J. Phys. Soc. Japan 7, 140(1952).
$_{47}Ag^{108}_{61}$	β^- 1.49 scin β^-/K ~2 γ ~1* 0.19 scin ~1* 0.42 ~4* 0.61 γγ, no βγ Pd K X-rays	M. Goodrich, E. C. Campbell, Phys. Rev. 85, 742A(1952); priv. comm. *Relative intensities.
$_{47}Ag^{109}_{62}$ 39^s	No ce$^-$ from 1 to 10 kev sl;e$^-$e$^-$	H. Schneider et al., Helv. Phys. Acta 25, 259(1952).

$_{47}Ag^{110}_{63}$ 270^{d}	β^- 65% 0.088 33% 0.52 <2% 2.89 E_γ e^-_K/β^-* K/L + M 0.116 550 1.8 s; 0.447 35 ce$^-$ 0.618 6.5 0.655 200 4.3 0.687 16 0.706 32 6.6 0.740 5.5 0.759 31 6.5 0.815 7.5 4.1 0.883 62 4.2 0.932 23 6.5 1.386 12 6.5 1.480 1.7 1.506 5 4.5	N. M. Anton'eva et al. Doklady Akad. Nauk USSR 77, 41(1951). *x10^3.
	β^- 0.59 s 2.24 2.9 γ 0.66 s;ce$^-$ 0.68 0.71 0.79 0.89 0.93	V. S. Shpinel, N. V. Forafontov, Zhur. Eksptl'. i Teoret. Fiz. 21, 1376(1951).
	γ (0.656) sl;ce$^-$ K/L = 14	W. C. Kelly, Phys. Rev. 85, 101(1952).
	γ 1.00* 0.652 s;Cpt 1.03* 0.886 0.26* 1.388 0.22* 1.484 *Relative intensities	B. S. Dzhelepov et al., Doklady Akad. Nauk, S.S.S.R. 77, 597(1951); Guide to Russ. Sci. Lit. 4, 369(1951).
$_{47}Ag^{115}_{68}$	τ 21^m p (90.8%)2.3^{d}Cd (9.2%)43^{d}Cd	A. C. Wahl,and N. A. Bonner, Phys. Rev. 85, 570(1952).
Cd	σ_s/σ_a graph E_n = 0.02 – 0.4 ev $\Gamma_n/\Gamma(E_0 = 0.176) = 0.0051$	B. N. Brockhouse et al., Phys. Rev. 83, 840(1951).
	σ_t(400 Mev) 1.70	V. A. Nedzel, J. Marshall, Phys. Rev. 86, 604A(1952).
	Resonances Cd(n,γ) E_0 ~27, ~90 ev	E. B. Meservey et al., Phys. Rev. 86, 605A(1952).
$_{48}Cd^{109}_{61}$	(L capture)/(K capture) 0.28 scin E_{dis} ~0.07 + 0.087(E_γ)	E. der Mateosian, A. Smith, Phys. Rev. 87, 193A(1952); verbal report.
	γ 0.087 sl;ce$^-$ (39^{s}Ag) α_K ~ 6 K/L = 0.75	O. Huber et al., Helv. Phys. Acta 25, 3 (1952). Ag(p,n).
$_{48}Cd^{111}_{63}$ 48.7^m	γ (0.149) scin α_K = 1.5 E3	A. W. Sunyar, Phys. Rev. 83, 864(1951). Cd^{110}(n,γ).
stable	μ(0.247 level) $\gamma\gamma(\theta)$ −0.70	H. Aeppli et al., Helv. Phys. Acta 25, 339(1952).
$_{48}Cd^{111}_{63}$ stable	Levels Cd^{111}(n,n) 0.400 48^m 0.720 1.150	J. J. G. McCue et al., Phys. Rev. 86, 632A (1952).
$_{48}Cd^{114}_{66}$	Capture γ Cd^{113}(n,γ) 0.555 (0.555 γ's)/(n's captured) ~0.9	W. A. Thornton, Jr., et al., Phys. Rev. 86, 604A(1952).
	Capture γ's Cd^{113}(n,γ) 0.100 sπ;ce$^-$ 0.578	C. T. Hibdon, C. O. Muehlhause, Phys. Rev. 87, 222A (1952).
	Levels Cd^{113}(n,γ) 12 capture γ's scin	R. W. Pringle et al., Phys. Rev. 87, 1016 (1952).
$_{48}Cd^{115}_{67}$ 43^d	β^- <1% 0.33 sl ~2% 0.65 ~98% 1.61 γ 0.46 scin 0.50 0.96 1.28 (0.46γ)(0.50γ)	R. W. Hayward, Phys. Rev. 87, 202A(1952); priv. comm.
	β^- 1.5 a p (<0.02%)4.5^{h}In	A. C. Wahl, N. A. Bonner, Phys. Rev. 85, 570(1952).
2.33^d	τ 2.25^d β^- 42% 0.58 sπ 58% 1.11 sπ	L. M. Langer et al., Phys. Rev. 86, 632A (1952). Cd^{114}(pile n).
	τ 2.21 ± 0.04^d β_1 15% 0.5 a β_2 85% 1.1 a γ ~0.55 a $\beta_1\gamma$	A. C. Wahl, N. A. Bonner, Phys. Rev. 85, 570(1952). Cd(n,γ); Cd(γ,n); and fission.
	β^- ~40% 0.59 sl ~60% 1.11 γ 0.335 scin 0.360 0.500 0.525 (0.36γ)(0.50γ)	R. W. Hayward, Phys. Rev. 87, 202A(1952); priv. comm.
In	σ_t(1 – 30 ev) graphs E_0(ev) Isotope* 1.458 115 1.80 113 3.86 115 4.69 113 9.16 115 12.1 115 14.8 113 22 – 26 113 23.5 115	V. L. Sailor, L. B. Borst, Phys. Rev. 87, 161(1952). *Enriched materials used.
$_{49}In^{111}_{61}$	γ $E\gamma$ α_K K/L 0.173 0.104 6.6 0.247 0.054 5.3	O. Huber et al., Helv. Phys. Acta 25, 3 (1952). Cd(p,n).
	$\gamma\gamma(\theta)$ b = −0.19	J. C. Kluyver, M. Deutsch, Phys. Rev. 87, 203A (1952).

$_{49}In^{111}_{62}$	$(0.172\gamma)(0.247\gamma)$ $\sim 0.1^{\mu s}$ delay	M. M. Miller et al., Phys. Rev. 84, 849 (1951).
$_{49}In^{113}_{64}$ 1.73^h	γ 0.3933 sπ;ce$^-$	J. M. Cork et al., Phys. Rev. 84, 596(1951).
	γ (0.390) scin $\alpha = 0.55$	T. B. Cook, Jr., S. K. Haynes, Phys. Rev. 86, 190(1952).
stable	q 0.820 Calc M with configuration interaction (unshielded)	G. F. Koster, Phys. Rev. 86, 148(1952).
$_{49}In^{114}_{65}$ 50^d	γ 0.192 s;ce$^-$ $\alpha_K \sim 5$ K/L + M = 1.16 0.553 s;pe$^-$ 0.711	V. S. Shpinel, N. V. Forafontov, Zhur. Eksptl'. i Teoret. Fiz. 21, 1376(1951).
	γ 0.192 sl;ce$^-$ K/L = 0.96	O. Huber et al., Helv. Phys. Acta 25, 3 (1952). Cd(p,n).
	γ (0.192) sl;ce$^-$ K/L = 1.30	W. C. Kelly, Phys. Rev. 85, 101(1952).
	γ (0.192) s,ce$^-$ $\alpha_K = 2.4^*$ K/L = 1.1 $\gamma\gamma(\theta)$ indicates I = 4,2,0	R. M. Steffen, Phys. Rev. 83, 166(1951). *E4.
	1.27 γ 6% of cascade γ's $\gamma\gamma(\theta)$ consistent with I = 2,2,0	E. D. Klema, F. K. McGowan, Phys. Rev. 87, 524(1952).
	$\gamma\gamma(\theta)$ consistent with I = 2,2,0	R. M. Steffen, priv. comm. in Phys. Rev. 87, 524(1952).
72^s	β^- 96% 1.984 s β^+ 0.015% 1.0–1.4 a γ 3.6%* 0.556 s;pe$^-$ 0.1% 0.576 3.5% 0.722 0.02% 1.271 0.12% 1.300 No 1.85γ (<0.25 of 1.3γ) (1.300γ)(0.556γ)	M. W. Johns, et al., Phys. Rev. 87, 1134(1952). *Photon %'s per disintegration, based on $\alpha = 4$ for 0.192 γ of 50^d In^{114}.
	$\beta^+/\beta^- < 5 \times 10^{-6}$ 1.27γ/cascade γ's = 0.03 $\gamma\gamma(\theta)$, 1.27γ intensity consistent with I = 2,2,0	M. W. Johns et al., Phys. Rev. 86, 632A (1952); "Errata," p. 581.
$_{49}In^{115}_{66}$ 4.5^h	β^- 5.5% 0.84 sπ γ 0.3337 sπ;ce$^-$ $\alpha_K = 0.64$, K/L + M = 3.76	L. M. Langer et al., Phys. Rev. 86, 632A (1952).
stable	μ 5.5109 I	Y. Ting et al., Phys. Rev. 86, 618A(1952).
	q 0.834 Calc M with configuration interaction (unshielded)	G. F. Koster, Phys. Rev. 86, 148(1952).
Sn	σ_t(14 Mev) 4.02	L. S. Goodman, ANL-4602 (Mar. 1951).
$_{50}Sn^{113}_{63}$ 112^d	τ 118^d γ 0.2552 sπ;ce$^-$ 0.4009	J. M. Cork et al., Phys. Rev. 84, 596(1951). Sn^{112} (pile n).
$_{50}Sn^{115}_{65}$	In^{115}(p,n) n's first observed for E_p = 2.96	H. B. Willard et al., ORNL-1278, Dec. 1951.
$_{50}Sn^{117}_{67}$ 14.5^d	τ 14.0^d γ 0.1559 sπ;ce$^-$ K/L ~ 7 0.1594	J. M. Cork et al., Phys. Rev. 84, 596(1951). Sn^{116} (pile n).
	γ (0.155) s;ce$^-$ $L_I/L_{III} \sim 1$ (M4)	J. W. Mihelich, Phys. Rev. 87, 646 (1952).
$_{50}Sn^{119}_{69}$ 250^d	γ 0.0238 pc $\alpha = 7$	J. C. Bowe, P. Axel, Phys. Rev. 84, 939 (1951).
	γ 0.02 scin	G. Scharff-Goldhaber et al., Phys. Rev. 83, 480(1951).
	γ 0.0242 sπ;ce$^-$ L/M ~ 4 0.0653 K/L = 0.51*, L/M ~ 4	R. D. Hill, Phys. Rev. 83, 865(1951). Sn^{118}(n,γ). *M4.
	γ (0.024) s;ce$^-$ $L_I/L_{III} > 10$ (M1)	J. W. Mihelich, Phys. Rev. 87, 646 (1952).
$_{50}Sn^{123}_{73}$ 130^d	τ 125^d No 0.394γ sπ	J. M. Cork et al., Phys. Rev. 84, 596(1951).
$_{50}Sn^{124}_{74}$	$\tau_{\beta\beta}$ $>10^{17}$y	E. L. Fireman, D. Schwarzer, Phys. Rev. 86, 451(1952).
	$\tau_{\beta\beta}$ $>1.7 \times 10^{17}$y	M. I. Kalkstein, W. F. Libby, Phys. Rev. 85, 368(1952).
	$\tau_{\beta\beta}$ $>10^{17}$y*	J. A. McCarthy, Phys. Rev. 87, 194A(1952); *verbal report.
	$\tau_{\beta\beta}$ $>0.3 \times 10^{17}$y	R. M. Pearce, E. K. Darby, Phys. Rev. 86, 1049(1952).
$_{50}Sn^{125}_{75}$ 10^d	β^- 15%* ~0.5 a$\beta\gamma$ ~2.3 a γ 1.67 a coin (~0.5β^-)(1.67γ)	R. I. Mendenhall et al., Phys. Rev. 87, 203A(1952); *verbal report. Sn^{124}(pile n); chem.
$_{50}Sn^{127}_{77}$	τ 1.5^h p 93^{h}Sb, 9.3^{h}Te	J. W. Barnes and A. J. Freedman, Phys. Rev. 84, 365(1951). Fission.
Sb	σ_t(14 Mev) 4.6	L. S. Goodman, ANL-4602 (Mar. 1951).
$_{51}Sb^{120}_{69}$	6.0^d Sb^{120} assignment questioned	L. Katz, A. G. W. Cameron, Can J. Phys. 29, 518(1951).
$_{51}Sb^{121}_{70}$	q coupling ratio Sb^{123}/Sb^{121}=1.2751 I	H. G. Dehmelt, H. Krüger, Z. Physik 130, 385(1951).

$_{51}Sb^{122}_{71}$ 2.8^d	β^- 4.5% 0.73 69% 1.36 26% 1.94 $\Delta I = 2$, yes γ 73% 0.563 $\alpha_K = 0.0052$ E2 3.5% 0.692 0.8% 1.25 $\gamma\gamma(\theta)$ I = 2,2,0	M. J. Glaubman, F. R. Metzger, Phys. Rev. 87, 203A(1952); verbal report.
	γ 0.58 a	L. Katz, A. G. W. Cameron, Can. J. Phys. 29, 518(1951).
$_{51}Sb^{124}_{73}$	γ ~50%* (0.603) $\alpha_K = 0.0042$ E2	F. R. Metzger, Phys. Rev. 86, 435(1952). *% of disintegrations.
	0.60γ no parity change ($\beta\gamma$) polarization	R. Stump, Phys. Rev. 86, 249(1952).
60^d	$\beta\gamma(\theta)$ suggests I = 1, 1, 0 or 3, 2, 0 for 2.29β, 0.607γ, b(E_β) curves	E. K. Darby, W. Opechowski, Phys. Rev. 83, 887A and 676(1951). D. T. Stevenson and M. Deutsch, Phys. Rev. 83, 1202(1951).
$_{51}Sb^{126}_{75}$	τ 9^h β^- 1 a γ 0.4 a,scin 0.80 $\beta\gamma\gamma$	J. W. Barnes and A. J. Freedman, Phys. Rev. 84, 365(1951). Fission. Assignment from yield.
Te	σ_s incoh 0.6 σ_t(0.06 – 400 ev) graph E_0? 0.9,1.1,1.2,1.4,1.7 ev E_0 2.2 ev $\sigma_0\Gamma^{-2} = 900$ assigned to Te^{123}	C. Heindl, I. W. Ruderman, Phys. Rev. 83, 660(1951).
	Isotope shift S Increase at $Te^{126} - Te^{124}$	J. S. Ross, K. Murakawa, Phys. Rev. 85, 559(1952).
$_{52}Te^{120}_{68}$	σ_a(th n) 68 osc	H. Pomerance, T. Arnette, ORNL-940 (1950); priv. comm. (1952).
$_{52}Te^{121}_{69}$ 143^d	τ 140^d γ 0.0818 sπ;ce$^-$ 0.2136	J. M. Cork et al., Phys. Rev. 84, 596(1951). Te^{120}(pile n).
17^d	γ 0.575 sπ;ce$^-$	
$_{52}Te^{122}_{70}$	σ_a(th n) 2.7 osc	H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{52}Te^{123}_{71}$ 90^d	τ 121^d γ 0.0887 sπ;ce$^-$ 0.1592	J. M. Cork et al., Phys. Rev. 84, 596(1951). Te^{122}(pile n).
	γ (0.089) s;ce$^-$ L_I/L_{III}=0.5 (M4) (0.159) L_I/L_{III}>10 (M1)	J. W. Mihelich, Phys. Rev. 87, 646 (1952).
	$\gamma\gamma$ delay<10^{-9}s	F. K. McGowan, Phys. Rev. 85, 142 (1952).
$_{52}Te^{123}_{71}$ 90^d	γ <0.5% (0.248) scin	B. Hamermesh and V. Hummel, Phys. Rev. 84, 381(1951).
stable	τ >2×10^{14} y for K x ray	L. I. Rousinow, J. M. Igelnitzsky, Compt. rend. acad. sci. URSS. 49, 343(1945)
	μ −0.73209* I	S. S. Dharmatti, H. E. Weaver, Jr., Phys. Rev. 84, 843(1951).
	μ −0.6 S $\mu(Te^{125})/\mu(Te^{123}) = 1.19$	J. S. Ross, K. Murakawa, Phys. Rev. 83, 229A(1951).
	σ_a(th n) 390 osc	H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{52}Te^{124}_{72}$	σ_a(th n) 6.5 osc	H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{52}Te^{125}_{73}$ 58^d	γ 0.0353 sπ;ce$^-$ 0.1096	J. M. Cork et al., Phys. Rev. 84, 596(1951). Te^{124}(pile n).
	γ 0.110 $\alpha_K = 160$ (0.035) $\alpha_K = 11.4$ M1 K/L = 7.1, L/M = 5.3 si,scin,pc	J. C. Bowe, P. Axel, Phys. Rev. 85, 858(1952); 85, 734A(1952).
	$\gamma\gamma$ delay<2×10^{-9}s	F. K. McGowan, Phys. Rev. 85, 142 (1952).
stable	μ −0.88261* I	S. S. Dharmatti, H. E. Weaver, Jr., Phys. Rev. 84, 843(1951).
	μ −0.7 S $\mu(Te^{125})/\mu(Te^{123}) = 1.186$	J. S. Ross, K. Murakawa, Phys. Rev. 85, 559(1952); 83, 229A(1951).
	σ_a(th n) 1.5 osc	H. Pomerance, T. Arnette, ORNL-940 (1950).
$_{52}Te^{126}_{74}$	σ_a(th n) 0.77 osc	H. Pomerance, T. Arnette, ORNL-940 (1950); priv. comm. (1952).
$_{52}Te^{127}_{75}$ 90^d	τ 115^d γ 0.0887 sπ;ce$^-$	J. M. Cork et al., Phys. Rev. 84, 596(1951). Te^{126}(pile n).
$_{52}Te^{128}_{76}$	σ_a(th n) 0.3 osc	H. Pomerance, T. Arnette, ORNL-940 (1950); priv. comm. (1952).

$_{52}Te^{129}_{77}$ 32^{d}

τ	33.5^{d}		
γ	0.1060	sπ;ce$^-$	

J. M. Cork et al., Phys. Rev. 84, 596(1951). Te^{128}(pile n).

$_{52}Te^{130}_{78}$

σ_a(th n)		
	0.5	osc

H. Pomerance, T. Arnette, ORNL-940 (1950).

$_{52}Te^{133}_{81}$ 63^{m}

γ	0.3 – 0.4	scin,a
	σ = large	

A. C. Pappas, Phys. Rev. 87, 162(1952).

~2^{m}

τ_2	~2^{m}		
β^-	~70%	1.3	a
	~30%	2.4	
γ		0.6	a
		1.0	

d 63^{m} Te^{133}

A. C. Pappas, Phys. Rev. 87, 162(1952).

$_{53}I^{122}_{69}$

τ	3.6^{m}	
β^+	3.1	a

J. N. Young et al., Phys. Rev. 83, 1060(1951). Te^{122}(7.4 Mev p,n).

$_{53}I^{124}_{71}$

No. (2.2 β^+)γ

D. T. Stevenson and M. Deutsch, Phys. Rev. 83, 1202(1951).

$_{53}I^{125}_{72}$

τ 60.0^{d}

K 77% L 23%

γ	0.035	pc

<0.05% decay to 58^{d} Te

G. Friedlander, W. C. Orr, Phys. Rev. 84, 484 (1951).
Conclude all decay to 0.035 level, $E_{dis} \sim 0.115$.

(L capture)/(K capture)

0.23	scin

$E_{dis} \sim 0.10 + 0.035(E_\gamma)$

E. der Mateosian, A. Smith, Phys. Rev. 87, 193A(1952); verbal report.

$_{53}I^{126}_{73}$

$\beta\gamma(\theta)$ curve indicates I = 2+ for 0.39 level of Xe^{126}.

D. T. Stevenson, M. Deutsch, Phys. Rev. 84, 1071(1951).

$_{53}I^{127}_{74}$

q	−0.65	Mic

W. Gordy, J. Chem. Phys. 19, 792(1951).

$_{53}I^{128}_{75}$

Te K X-rays scin
$K/\beta^- = 0.063$
No Xβ

W. B. Mims, H. Halban, Proc. Phys. Soc. (London) 64A, 753 (1951).

$_{53}I^{129}_{76}$

q	−0.47	Mic

W. Gordy, J. Chem. Phys. 19, 792(1951).

$_{53}I^{131}_{78}$

β_1^-	2.8%	0.25	sl $\beta\gamma$
β_2^-	9.3%	0.34	
β_3^-	87.2%	0.61	sl
β_4^-	0.7%	0.81	

		E_γ	α_K	K/L*
γ_1	6.3%	0.080	1.73	7
γ_2	6.3%	0.284	0.047	5
γ_3	80.9%	0.364	0.018	8
γ_4	9.3%	0.637	0.0037	9
γ_5	-	0.163	-	-
γ_6	2.8%	0.722	0.0028	8

$\beta_3\gamma_1$ delay $<10^{-10}$s
$\beta_3\gamma_3$ delay $= 5 \times 10^{-10}$s
$\beta_1\gamma_6$, $\beta_2\gamma_4$
0.90β and 0.97β <0.2%

R. E. Bell et al., Can. J. Phys. 30, 35 (1952); Phys. Rev. 86, 212(1952).
*Not K/L + M.

$_{53}I^{131}_{78}$

β^-	13.3%	0.339	s$\pi\sqrt{2}$
	84.7%	0.606	
	~1.4%	0.807	
γ_2		0.284	E2,M1
γ_3		0.364	E2
γ_4	11.8%*	0.638	E1
γ_6	1.5%*	0.724	E2,M1

	α_K**	K/L	K/L + M
γ_2	0.036	5	5
γ_3	0.0174	6.6	4.7
γ_4	0.0021		5.2
γ_6	0.0037		

D. Rose et al., Phys. Rev. 86, 863 (1952).
*Assuming γ_4/γ_6 = 7.8.
**Assuming γ_2/γ_3 = 0.08.

β_1		0.250	sl; $\beta\gamma$
β_2		0.335	
β_3		0.606	
γ_1		0.080	scin
γ_2	9.4%	0.284	
γ_3	80.0%	0.364	
γ_4	7.7%	0.635	
γ_5	0.6%	0.163	
γ_6	2.3%	0.720	

$\beta_1\gamma_6$, $\beta_2\gamma_4$, $\beta_3\gamma_2$, $\beta_3\gamma_3$, $e_1^-\gamma_2$

B. H. Ketelle et al., Phys. Rev. 84, 585(1951).

β_1^-		0.255	sl
β_3^-		0.607	
γ_4	7.8*	0.6380	pe$^-$
γ_6	1	0.7239	

$(0.080\gamma)(\beta_3^-)$
$(0.080\gamma)(\beta_1^-)$?

S. Thulin, Phys. Rev. 83, 860(1951). Te(n,γ);ms. *Relative intensities.

β^-	13.2%	0.334	sl
	86.2%	0.606	
	0.6%	(0.807)*	

E_γ	α_K	K/L
0.080	0.7	7.0
0.284	0.039	K/L+M
0.364	0.019	4.2
0.636	0.0019	
0.724		

N. F. Verster et al., Physica 17, 637 and 658(1951). *Assumed value. See also Xe^{131}.

β^-	1*	0.246	a$\beta\gamma$
	2*	0.328	
γ		0.638	scin
		0.720	

P. E. Cavanagh, Phil. Mag. 43, 221 (1952). *Relative intensities.

$(0.080\gamma)(0.284\gamma)(\theta)$
constant

D. Schiff, Phys. Rev. 85, 727A (1952).

γ (0.080) s;ce$^-$
$L_I/L_{III} > 10$ (M1)

J. W. Mihelich, Phys. Rev. 87, 646 (1952).

γ_1 4.3% (0.080) pc,scin,
$\alpha_K = 1.8$ Xγ
γ_3 80.7% (0.36)
γ_7 0.3% (0.082)
from X(0.638γ)

P. E. Cavanagh, Phil. Mag. 43, 648 (1952).

γ (0.080) sl;ce$^-$
$\tau = 5 \times 10^{-10}$s
(0.364)
$\tau < 10^{-10}$s

R. L. Graham and R. E. Bell, Phys. Rev. 84, 380(1951).

0.080 quanta/β^- ~2.6% ic
12^{d} Xe/β^- ~0.8%

E. W. Emery, Phys. Rev. 83, 679(1951).

$\bar{E}_{\beta^-}$ 0.189 ± 0.008 ic

R. S. Caswell, Phys. Rev. 86, 82(1952).

$_{53}I^{132}_{79}$	γ	88%*	0.68	scin	F. C. Maienschein et al., Phys. Rev. 83, 477(1951). *Relative intensities.
			0.8?		
		9.5%	1.41		
		2.4%	2.0		
	(0.68γ)(1.41γ)				
	No (0.68γ)(2.0γ)				
$_{54}Xe^{129}_{75}$ 8^d	γ_2		0.040	sl;Lce$^-$	S. Thulin, I. Bergström, Phys. Rev. 85, 1055(1952).
	Crossover not found				
$_{54}Xe^{131}_{77}$ ~12^d	γ		0.163	sl,ce$^-$	N. F. Verster et al., Physica 17, 637(1951).
	K/L+M = 1.67				
$_{54}Xe^{135}_{81}$	σ_a(th n)		3.5 × 10^6		Office of Classification, AEC, April 7, 1952; Nature 169, 871 (1952).
Cs	Resonances				R. H. Rohrer, Phys. Rev. 87, 177A (1952).
	E_0	~10, ~300 ev			
	Resonance			Cs(n,γ)	H. H. Landon, V. L. Sailor, Phys. Rev. 86, 605A(1952).
	E_0		$\sigma_0\Gamma^2$		
	5.70 ev		161		
$_{55}Cs^{130}_{75}$	τ		30^m		A. B. Smith et al. Phys. Rev. 87, 454 (1952). I(23 Mev α,n); chem.
	K				
	β^+		1.97	sl	
	β^-		0.442	sl	
	No γ's			scin	
	β^+/β^- = 27.6				
$_{55}Cs^{131}_{76}$	No β^+			sl	R. Canada, A. C. G. Mitchell, Phys. Rev. 83, 76, 216A(1951).
	No γ			sl	
	No γ			scin	W. L. Stirling, M. Goodrich, Phys. Rev. 87, 176A (1952).
	x ray				
$_{55}Cs^{134}_{79}$ 3.15^h	γ		(0.128)	scin	A. W. Sunyar, Phys. Rev. 83, 864(1951). Cs(n,γ).
			α_K = 2.2	E3	
	γ		(0.128)	s;ce$^-$	J. W. Mihelich, Phys. Rev. 87, 646 (1952).
			L_{II}/L_{III} ~1	(E3)	
2.3^y	I		4	M	V. Jaccarino et al., Phys. Rev. 87, 676 (1952). Cs(pile n); ms.
	μ		+2.96	M	
	β^-	21%	0.079	s	F. H. Schmidt, G. L. Keister, Phys. Rev. 86, 632A(1952) and verbal report. *Relative intensities.
		6%	0.253		
		54%	0.640		
		19%	0.676		
	γ	0.11*	0.561	ce$^-$,pe$^-$	
		0.16*	0.567		
		0.89*	0.601		
			$\alpha_K = 5.7 \times 10^{-3}$		
		1.00*	0.793		
			$\alpha_K = 2.1 \times 10^{-3}$		
		vw	1.037	ce$^-$	
		vw	1.164		
		vw	1.365		
$_{55}Cs^{136}_{79}$ 2.3^y	β^-	25%	0.092	s;pe	C. L. Peacock, J. L. Braud, Phys. Rev. 83, 484A(1951). $\alpha_K = 9.1 \times 10^{-3}$ $\alpha_K = 5.7 \times 10^{-3}$ $\alpha_K = 3.0 \times 10^{-3}$
		75%	0.648		
	γ		0.558		
			0.600		
			0.800		
			1.352		
	γ	30%*	0.570	s;pe$^-$	V. S. Shpinel, Zhur. Eksptl'. i Teoret. Fiz. 21, 853(1951). NSA 6, 742(1952). *Relative photon %'s.
		100%*	0.601		
		100%*	0.794		
			1.02		
			1.11		
		3%*	1.35		
	$\gamma\gamma(\theta)$ consistent with I = 5,4,2,0				B. L. Robinson and L. Madansky, Phys. Rev. 84, 604(1951).
$_{55}Cs^{137}_{82}$	γ		(0.661)		R. L. Heath, P. R. Bell, Phys. Rev. 87, 176A(1952).
			α_K = 0.095 ± 0.005	scin	
	γ		(0.661)		W. L. Bendel et al., Phys. Rev. 87, 195A(1952).
	K : L : M + N = 5.5 : 1 : 0.27			s$\pi\sqrt{2}$	
Ba	σ_t(156 Mev)				A. E. Taylor et al., Phil. Mag. 42, 75(1951).
			2.48		
	Resonances			Ba(n,γ)	E. B. Meservey et al., Phys. Rev. 86, 605A (1952).
	E_0	~25, ~101 ev			
$_{56}Ba^{128}_{72}$	γ	13*	0.122	sl;pe$^-$	R. Canada, A. C. G. Mitchell, Phys. Rev. 83, 76, 216A(1951). *Relative intensities from pe$^-$'s.
		44	0.196		
		53	0.213		
		14	0.241		
		120	0.371		
		1000	0.497		
$_{56}Ba^{133}_{77}$ 38.9^h	γ		0.275	sπ;ce$^-$	R. D. Hill, F. R. Metzger, Phys. Rev. 83, 455(1951). Cs(10 Mev d,2n); chem.
			α_K = 3	scin	
	γ		0.012	pc	R. D. Hill et al., Phys. Rev. 84, 382(1951). Cs(15 Mev d,2n); chem.
			α_{L+M} ~ 130		
			$\tau < 5 \times 10^{-7}$s		
	(0.275 γ)(0.012 γ)				
$_{56}Ba^{134}_{78}$	σ_a(th n)				H. Pomerance, priv. comm. (1952).
			2	osc	
$_{56}Ba^{135}_{79}$ 28.7^h	γ		0.267	scin; sl,ce$^-$	W. H. Cuffey, R. Canada, Phys. Rev. 83, 654(1951).
	γ		0.269	sπ;ce$^-$	R. D. Hill, F. R. Metzger, Phys. Rev. 83, 455(1951). Ba^{134}(pile n).
			α_K = 3.5, K/L ~2		
stable	σ_a(th n)				H. Pomerance, priv. comm. (1952).
			5.6	osc	
$_{56}Ba^{136}_{80}$	σ_a(th n)				H. Pomerance, priv. comm. (1952).
			0.4	osc	
$_{56}Ba^{137}_{81}$ 2.60^m	γ		(0.662)	sl;ce$^-$	W. C. Kelly, Phys. Rev. 85, 101(1952).
	K/L = 4.57				
stable	σ_a(th n)				H. Pomerance, priv. comm. (1952).
			4.9	osc	

$_{56}Ba^{138}_{82}$	σ_a(th n) 0.68 osc	H. Pomerance, priv. comm. (1952).
$_{56}Ba^{140}_{84}$	τ 13.4^d γ 0.0296 0.304 0.132 0.537 s;ce$^-$ 0.162	J. M. Cork et al., Phys. Rev. 83, 856 (1951). Fission. No 0.076γ.
La	Resonance E_0 76 ev	R. H. Rohrer, Phys. Rev. 87, 177A (1952).
$_{57}La^{138}_{81}$	τ_K 7×10^{10}y τ_β 1.2×10^{12}y β^- or e$^-$ 1.0 a Ba K x rays	G. I. Mulholland, T. P. Kohman, Phys. Rev. 87, 681 (1952).
	τ 2.0×10^{11}y γ 51% 0.535 scin 33% 0.807 15% 1.390 <0.2 particles/sec/g with E > 0.1. Ba x-ray?	R. W. Pringle et al., Phys. Rev. 84, 1066 (1951).
$_{57}La^{139}_{82}$	σ_S coh 8.7	W. C. Koehler, E. O. Wollan, Phys. Rev. 87, 238A(1952).
$_{57}La^{140}_{83}$	γ s,ce$^-$ 0.069 0.241 0.752 0.109 0.265 0.816 0.110 0.329 0.926 0.131 0.431 1.597 0.173 0.486 1.904	J. M. Cork et al., Phys. Rev. 83, 856(1951). Fission.
	(2.26β)(1.60γ) (1.60γ)(0.82γ) $\gamma\gamma$ (θ) indicates I = 4+, 2+, 0+ for 2.42, 1.60, 0 levels in Ce^{140}.	B. L. Robinson, L. Madansky, Phys. Rev. 84, 1067(1951).
	β^- ~2.3 scin γ_1 <1%* 0.093 scin γ_2 3% 0.335 γ_3 22% 0.49 γ_4 16% 0.82 γ_5 56% 1.62 γ_6 3% 2.55 $\gamma_3\gamma_5$, $\gamma_4\gamma_5$, $\gamma_2\gamma_6$	R. C. Bannerman et al., Phil. Mag. 42, 1097(1951). *% of γ's.
$_{57}La^{141}_{84}$	β^- ~5% 0.9 sl ~95% 2.43 γ low intensity scin, $\beta\gamma$	R. B. Duffield, L. M. Langer, Phys. Rev. 84, 1065(1951).
Ce	σ_S coh 2.7	W. C. Koehler, E. O. Wollan, Phys. Rev. 87, 238A(1952).
	σ_a(th n) 0.80 osc	H. Pomerance, Phys. Rev. 83, 641(1951).
$_{58}Ce^{136}_{78}$	σ_a(th n) 25 osc	H. Pomerance, priv. comm. (1952).
$_{58}Ce^{137}_{79}$	γ 0.2534 s;ce$^-$	H. B. Keller, J. M. Cork, Phys. Rev. 83, 216A(1951); 84, 1079 (1951).
$_{58}Ce^{138}_{80}$	σ_a(th n) 8.7 osc	H. Pomerance, ORNL-1164(1951); priv. comm. (1952).
$_{58}Ce^{139}_{81}$	γ 0.1660 s;ce$^-$ 0.2752	H. B. Keller, J. M. Cork, Phys. Rev. 83, 216A(1951); 84, 1079 (1951).
$_{58}Ce^{140}_{82}$	σ_S coh 2.8	W. C. Koehler, E. O. Wollan, Phys. Rev. 87, 238A(1952).
	σ_a(th n) 0.63 osc	H. Pomerance, ORNL-1164(1951); priv. comm. (1952).
$_{58}Ce^{141}_{83}$	No β^+ β^- 70% 0.444 s 30% 0.582 γ 0.143 s;ce$^-$ α~0.5 E2,M1 K/L~6.5	E. Kondaiah, Arkiv för Fysik 4, 81 (1952); Phys. Rev. 83, 471(1951). Ce(pile n).
	γ (0.141) scin α_K = 0.46 K/LM = 5 M1,E2	R. L. Heath, Phys. Rev. 87, 1132 (1952).
	γ 0.142 scin α_K = 0.48 M1,E2 No 0.315 γ	S. A. E. Johansson, Arkiv för Fysik 3, 533(1952). Ce(pile n).
	γ 0.1457 s;ce$^-$ No 0.315γ observed	H. B. Keller, J. M. Cork, Phys. Rev. 83, 216A(1951); 84, 1079 (1951).
	γ 0.141 scin No γ 0.3 < E_γ < 0.6 $\beta\gamma$	R. B. Duffield, L. M. Langer, Phys. Rev. 84, 1065(1951).
$_{58}Ce^{142}_{84}$	σ_S coh 2.6	W. C. Koehler, E. O. Wollan, Phys. Rev. 87, 238A(1952).
	σ_a(th n) 1.76 osc	H. Pomerance, ORNL-1164(1951); priv. comm. (1952).
$_{58}Ce^{143}_{85}$	τ 34^h β^- 0.37 ? s 40%* 1.09 30% 1.37 I(γ) E_γ α_K K/L γ_1 - 0.057 - 1 γ_2 70%* 0.283 0.03 6 γ_3 15% 0.649 0.01 - γ_4 15% 0.705 - - No 0.348 γ γ_2(E2 or M1); γ_3(E2 or M1) (>0.930β^-)(γ)	E. Kondaiah, Arkiv för Fysik 4, 81 (1952); Phys. Rev. 83, 471(1951). Ce(pile n). *Relative β and photon %'s.
	γ 0.0575 K/L < 1 s;ce$^-$ 0.2906 K/L = 10 w 0.3484 K ce$^-$	H. B. Keller, J. M. Cork, Phys. Rev. 83, 216A(1951); 84, 1079 (1951).

$_{58}Ce^{144}_{86}$	τ 282^d pc τ 295^d β^- 30% 0.170 sπ 70% 0.304 γ I(e^-)* E_γ K/L >0.25% 0.0337 0.535 ~1.9 % 0.0807 ~3.5 0.1003 6.1 % 0.1342 8.8 No 0.45 β^- No 0.041, 0.047, 0.095, 0.231 γ's	R. P. Schuman and A. Camilli, Phys. Rev. 84, 158(1951). F. T. Porter, C. S. Cook, Phys. Rev. 87, 464(1952); 85, 733A(1952). Fission; chem. *% of 2.97 β in Pr^{144}.
	β^- 97% 0.307 s 3% 0.446 γ 0.0547 0.0794 K/L = 6.3 0.134 K/L = 8.3 0.231 K/L = 1.7	L. S. Cheng et al., Phys. Rev. 85, 487(1952). Fission; chem.
	γ (0.132) sl;ce^- K/L = 5.3	W. C. Kelley, Phys. Rev. 85, 101(1952);
Pr	σ_s coh 2.4	W. C. Koehler, E. O. Wollan, Phys. Rev. 87, 238A(1952).
	Resonance E_0 380 ev	R. H. Rohrer, Phys. Rev. 87, 177A (1952).
$_{59}Pr^{140}_{81}$	β^+ 2.23 sπ√2 γ/K x ray <10% β^+/K ~1.6 assuming K capt/L capt = 7	C. I. Browne et al., Phys. Rev. 85, 146 (1952). Pr(19 Mev d)Nd^{140} Pr^{140}; ion chem.
$_{59}Pr^{141}_{82}$	μ value of 4.5669 due to Rb^{87} impurity	D. Williams, Phys. Rev. 83, 858(1951).
$_{59}Pr^{142}_{83}$	β^- 2.14 s $\Delta I = 2$, yes shape	J. Moreau, J. Perez y Jorba, Compt. rend. 235, 38(1952).
	γ 1.58 sl;pe^- No other γ	E. N. Jensen et al., Phys. Rev. 86, 1047(1952).
$_{59}Pr^{143}_{84}$	β^- 0.915 s	E. Kondaiah, Arkiv för Fysik 4, 81 (1952); Phys. Rev. 83, 471(1951).
$_{59}Pr^{144}_{85}$	β^- 3% 0.605 s 12% 1.30 85% 3.00	L. S. Cheng et al., Phys. Rev. 85, 487(1952).
	β^- ~5% 0.86 sl ~5% 2.3 90% 2.96 γ 91%* 0.695 sl;pe^- 36%* 1.48 100%* 2.18 $\gamma\gamma(\theta)$ consistent with I = 1,2,0 or 1,1,0	D. E. Alburger, J. J. Kraushaar, Phys. Rev. 87, 448(1952); 86, 633A(1952); 82, 332A(1951). Fission; Ce chem. *Relative photon %'s.
	β^- >98% 2.97 s γ w 0.0603 s;ce^- <1% (0.7) scin <1% (1.5) scin <1% (2.2) scin	F. T. Porter, C. S. Cook, Phys. Rev. 87, 464(1952); 85, 733A(1952).
Nd	σ_s coh 6.5	W. C. Koehler, E. O. Wollan, Phys. Rev. 87, 238A(1952).
	σ_a(th n) 43 osc	J. Ailloud et al., J. phys. radium 13, 171(1952).
	<0.02 α's/sec(gm of Nd) <0.003 β's/sec(gm of Nd)	G. I. Mulholland, T. P. Kohman, Phys. Rev. 85, 144(1952).
$_{60}Nd^{140}_{80}$	E_{dis}~0.1, K capt/L capt = 2.8 from K x-ray intensities in Nd^{140} → Pr^{140} → Ce^{140}	C. I. Browne et al., Phys. Rev. 85, 146 (1952). Pr(19 Mev d); ion chem.
$_{60}Nd^{142}_{82}$	σ_s coh 7.5	W. C. Koehler, E. O. Wollan, Phys. Rev. 87, 238A(1952).
$_{60}Nd^{144}_{84}$	σ_s coh 1.0	W. C. Koehler, E. O. Wollan, Phys. Rev. 87, 238A(1952).
$_{60}Nd^{146}_{86}$	σ_s coh 9.5	W. C. Koehler, E. O. Wollan, Phys. Rev. 87, 238A(1952).
$_{60}Nd^{147}_{87}$	τ 11.9^d β_1^- 0.384 sπ β_2^- 0.598 β_3^- 0.825 γ 0.091 sπ;ce^- K/L = 4.9 0.301 0.120 0.318 0.197 0.398 0.231 0.441 0.260 0.532 0.273 E2 K/L~6 β_1(0.532γ), β_2(0.318γ), β_3(0.091γ), (0.091γ)(0.441γ)	W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). Nd^{146}(n,γ).
	τ 11.1^d β_1^- ~25% 0.38 β_2^- ~15% 0.60 sl β_3^- ~60% 0.825 γ_1 0.0915 K/L ~2.5 ce$^-$ γ_2 0.320 γ_3 0.534	W. S. Emmerich, J. D. Kurbatov, Phys. Rev. 83, 40(1951). Nd(n,γ). β_γX, $\beta_3 e_1^-$, $\beta_3 e_2^-$, and $\beta\gamma$. No $\gamma\gamma$, γX, or XX.
	τ 11.6^d β^- ~33%* 0.35 s ~67% 0.78 s γ 66%* 0.091 ce^-,pe^- α_K = 0.8 K/L = 6.5 M1 32% 0.522 pe^- ~ 2% 0.310, 0.392 impurity ?	E. Kondaiah, Arkiv för Fysik 4, 81 (1952); Phys. Rev. 81, 1056(1951). Nd(pile n). *Relative β and photon %'s.
	γ (0.091) sl;ce^- K/L = 7.6 K/LM = 6.9 M1	A. B. Smith, A. C. G. Mitchell, Phys. Rev. 87, 1128 (1952). Fission.

$_{60}Nd^{147}_{87}$	γ 0.0918 sπ K/L_1 = 6.4	J. W. Mihelich, E. L. Church, Phys. Rev. 85, 690(1952).
$_{60}Nd^{149}_{89}$	τ 1.8^h β_1^- 0.95 sπ β_2^- 1.1 β_3^- 1.5 γ 0.030 0.210 0.096 K/L~7 E2 K/L = 0.9 0.226 0.112 0.240 0.114 0.266 K/L~5 0.424 0.124 0.538 0.188 0.650 0.198 $\beta_1(0.650\gamma)$, $\beta_2(0.210-0.266\gamma)$, $\gamma\gamma$	W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Nd^{148}(n,\gamma)$. γ's by sπ; pe^-, ce^-; scin.
$_{60}Nd^{150}_{90}$	τ_β >2 × 10^{15}y	G. I. Mulholland, T. P. Kohman, Phys. Rev. 85, 144(1952).
$_{60}Nd^{151}_{91}$	τ 12^{m*} β^- 1.93 sπ γ 0.085 0.421 sπ; 0.110 0.72 ce^-; 0.117 1.14 scin K/L~4 $(1.93\beta)(\sim 0.1\gamma)$, $(1.93\beta)(1.14\gamma)$	W. C. Rutledge et al., Phys. Rev. 86, 775 (1952); 85, 734A (1952). $Nd^{150}(n,\gamma)$. Parent of 27.5^{h}Pm. *Formerly assigned to Pm^{151}.
$_{61}Pm^{141}_{80}$	τ 20^m β^+ ~2.6 s γ	V. Kistiakowsky, Phys. Rev. 87, 859 (1952). Nd^{142}(20 Mev p); yield. Not produced by Pr(35 Mev α).
$_{61}Pm^{147}_{86}$	τ <2^m or >100^y No activity observed from Nd^{142}(11 Mev p) and Pr^{141}(36 Mev α)	V. Kistiakowsky, Phys. Rev. 87, 859 (1952).
$_{61}Pm^{143}_{82}$ $_{61}Pm^{144}_{83}$	τ 200–400^d β or e^- 0.6 a γ 0.17 scin 0.44 0.65 K,L x rays	V. Kistiakowsky, Phys. Rev. 87, 859(1952). Pr(15 Mev α), Nd^{143}(9 Mev p), Nd^{144}(9 Mev p); ion chem.
$_{61}Pm^{146}_{85}$	τ ~1^y β^- ~0.7 a	V. Kistiakowsky, Phys. Rev. 87, 859 (1952). Nd^{146}(9 Mev p); yield.
$_{61}Pm^{147}_{86}$	2.6^y pc	R. P. Schuman and A. Camilli, Phys. Rev. 84, 158(1951).
$_{61}Pm^{148}_{87}$ 48^d	τ_2 48^d β^- 0.6 a 1.7 γ ~0.54 a	J. K. Long, M. L. Pool, Phys. Rev. 85, 137(1952). Nd^{148}(6-Mev p,n); rare earth chem.
$_{61}Pm^{148}_{87}$ 48^d	τ_2 42^d β^- 93% 0.7 a 7% 2.7 a γ ~1.0 a K x rays ?	V. Kistiakowsky, Phys. Rev. 87, 859 (1952). Nd^{148}(9 Mev p).
$_{61}Pm^{149}_{88}$	τ 54^h β^- 1.0 s,a γ ~0.3 scin K x rays	V. Kistiakowsky, Phys. Rev. 87, 859 (1952). Nd^{150}(9 Mev p); yield; ion chem.
	τ 50^h β^- 1.05 s No e^-	E. Kondaiah, Arkiv för Fysik 4, 81 (1952); Phys. Rev. 81, 1056(1951). Nd(pile n).
	τ 50^h β^- 1.05 sπ γ 0.285 sπ,ce^- K/L~8 M1 1.3 a $(1.05\beta)(0.285\gamma)$	W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Nd^{148}(n,\gamma,\beta)$.
$_{61}Pm^{150}_{89}$	τ 2.7^h β^- 2.4 a	J. K. Long, M. L. Pool, Phys. Rev. 85, 137(1952). Nd^{150}(6-Mev p,n).
	τ 2.7^h β^- 70% 2.01 sπ$\sqrt{2}$ 30% 3.00 sπ$\sqrt{2}$ γ 0.3 a 1.4 a	V. Kistiakowsky, Phys. Rev. 87, 859 (1952). Nd^{150}(9 Mev p); ion chem.
$_{61}Pm^{151}_{90}$	τ 28^{h*} β^- 1.1 a γ 0.065 0.177 E2 K/L = 0.3 K/L~9 0.066 0.208 E2 K/L = 0.2 K/L~4 0.070 0.232 E2 K/L = 0.2 0.240 0.100 0.275 K/L~5 0.340 0.116 K/L~9 0.144 0.715 0.163 0.168 sπ; K/L~3 pe^-,ce^-	W. C. Rutledge et al., Phys. Rev. 86, 775 (1952); 85, 734A (1952). *12^mactivity previously assigned here now assigned to Nd^{151}, q.v. $Nd^{150}(n,\gamma\beta)$.
Sm	σ_n/σ_a graph E_n = 0.02 - 0.15 ev $\Gamma_n/\Gamma(E_0 = 0.096)$ ~0.008	B. N. Brockhouse, D. G. Hurst, Phys. Rev. 83, 841(1951).
$_{62}Sm^{145}_{83}$	K γ 0.061 sπ;ce^- K/L = 1.0 (Pm) No 0.242γ, 0.95γ	W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Sm^{144}(n,\gamma)$.
	0.242 and 0.95 γ's due to impurity, probably Eu	R. Katz, M. R. Lee, Phys. Rev. 85, 1038 (1952).

$_{62}Sm^{147}_{85}$	I	½	para	G. S. Bogle, H. E. D. Scovil, Proc. Phys. Soc., (London) A65, 368(1952).
	|μ|	0.7	para	R. J. Elliott, K. W. H. Stevens, Proc. Phys. Soc.,(London) A65, 370(1952).
	|q|	<0.7		
	No e^-		ppl	D. C. Dunlavey, G. T. Seaborg, Phys. Rev. 87, 165 (1952).
$_{62}Sm^{149}_{87}$	I	½	para	G. S. Bogle, H. E. D. Scovil, Proc. Phys. Soc., (London) A65, 368(1952).
	|μ|	0.6	para	R. J. Elliott, K. W. H. Stevens, Proc. Phys. Soc., (London) A65, 370 (1952).
	|q|	<0.7		
$_{62}Sm^{150}_{88}$	Capture γ's		$Sm^{149}(n,\gamma)$	C. T. Hibdon, C. O. Muehlhause, Phys. Rev. 87, 222A (1952); 83, 235A (1951).
	0.347		sπ;ce^-	
	0.453			
$_{62}Sm^{151}_{89}$	τ	$>20^y$		W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Sm^{150}(n,\gamma)$.
	No e^-			
	τ	$\sim 70^y$	ms	D. G. Karraker et al., Phys. Rev. 87, 901(1952). Fission.
$_{62}Sm^{153}_{91}$	τ	46^h		W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Sm^{152}(n,\gamma)$.
	β^-	0.820	sπ	
	γ	0.070		γ's by sπ; pe^-, ce^-.
		K/L = 0.29	E2	
		0.103		
		K/L = 3.5		
		0.582		
	(0.070γ)(0.103γ)			
	β^-	0.700	aβγ	R. C. Bannerman, Proc. Phys. Soc. London 65A, 565 (1952). *Relative photon %'s.
		0.800	scin	
	γ ~4%*	0.0695	scin	
		α>10		
	26%	0.101		
		α~3		
	X 70%			
	$(0.700\beta^-)(0.101\gamma)$, γγ			
	No 0.6γ (<0.005%)			
	E_{dis} = 0.800		scin	
	β^-	0.70	sl	K. Siegbahn, Arkiv för Fysik 4, 223 (1952). *Rel. transition %'s. **Sm_2O_3 source.
	γ_1 ~10%*	0.07	sl;ce^-	
		α≫1		
	γ_2 100%*	0.103	sl,scin	
		α_K = 0.65,		
		K/L~6		
	γ_3 w	0.53	scin	
	$e_1^-e_2^-$			
	$[(0.17\beta)e_{K2}](\theta)$ = const**			
$_{62}Sm^{153}_{91}$	γ	0.070	scin	F. K. McGowan, ORNL-1278, Dec. 1951.
		α_K = 3.8 M1,E2		
		0.102		
		α_K = 1.3 M1,E2		
		K/L = 3.5		
$_{62}Sm^{155}_{93}$	τ	23.5^m		W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Sm^{154}(n,\gamma)$.
	β^-	1.8	sπ	
	γ	0.105		γ's by sπ; pe^-, ce^-.
		K/L~4		
		0.246		
	$(1.8\beta^-)(0.105\gamma)(0.246\gamma)$			
$_{63}Eu^{145}_{82}$	τ	5^d		R. W. Hoff et al., Phys. Rev. 83, 1068(1951). Tb^{149} α decay, Sm^{147}(50 Mev p,3n); chem.
	e^-	0.2	a	
$_{63}Eu^{146}_{83}$	τ	38^h		R. W. Hoff et al., Phys. Rev. 83, 1068(1951). Sm^{147}(19 Mev d,3n), Sm^{144}(25 Mev α).
	e^-	0.4	a	
$_{63}Eu^{147}_{84}$	τ	24^d		R. W. Hoff et al., Phys. Rev. 83, 1068(1951). Sm^{147}(8.5 Mev p,n), chem.
	e^-	0.2	a	
	α	2.88	ic	
	$\alpha/K \sim 10^{-5}$			
$_{63}Eu^{148}_{85}$	τ	50^d		R. W. Hoff et al., Phys. Rev. 83, 1068(1951). Sm^{148}(8.5 Mev p,n).
	e^-	0.38	a	
	τ	58.6^d		R. C. Mack et al., Phys. Rev. 86, 633A (1952). Sm^{148}(6.8-Mev p,n).
	K			
	γ	0.69	a	
$_{63}Eu^{149}_{86}$	τ	$<1^h$ or $>50^d$		R. W. Hoff et al., Phys. Rev. 83, 1068(1951). Sm^{149}(8.5 Mev p,n).
$_{63}Eu^{150}_{87}$	τ	13.1^h		R. C. Mack et al., Phys. Rev. 86, 633A (1952) and verbal report. Sm^{150}(6.8-Mev p,n).
	β^- 40%	0.8	s	
	32%	1.0		
	28%	1.1		
$_{63}Eu^{152}_{89}$ 9.2^h	γ	0.1219	sπ;ce^-	H. B. Keller, J. M. Cork, Phys. Rev. 84, 1079(1951).
		K/L ~ 4	(Sm)	
		0.3441		
		K/L ~ 10	(Gd)	
5.3^y	New assignment of γ's			
	τ	13^y	ms	D. G. Karraker et al., Phys. Rev. 87, 901(1952). Eu(pile n); ion chem.
	β^-	0.75	s,βce^-	L. Y. Shavtvalov, Zhur. Eksptl'. i Teoret. Fiz. 21, 1123(1951); NSA 6-3717(1952).
	$[0.75\beta^-][e^-(0.336\gamma)]$			
	0.122γ follows K			
	γ	0.121	sπ;ce^-	R. Katz, M. R. Lee, Phys. Rev. 85, 1038 (1952).
		0.244		
		0.344		
		0.990	a	

$_{63}Eu^{152}_{89}$ 5.3^{y}	(0.123γ)(0.344γ) e$^-$e$^-$ (0.121γ)(0.244γ) No (0.244γ)(0.344γ)	C. M. Fowler, R. G. Shreffler, Rev. Sci. Instruments 21, 740 (1950).
$_{63}Eu^{154}_{91}$ 5.4^{y}	τ 16^{y} ms	D. G. Karraker et al., Phys. Rev. 87, 901(1952). Eu(pile n); ion chem.
	New assignment of γ's	H. B. Keller, J. M. Cork, Phys. Rev. 84, 1079(1951).
	γ 0.122 sπ;ce$^-$ 1.17 a	R. Katz, M. R. Lee, Phys. Rev. 85, 1038 (1952).
$_{63}Eu^{155}_{92}$	τ 1.7^{y} γ 0.060 sπ;pe$^-$, 0.087 ce$^-$ K/L ~8 0.106 K/L ~8 0.132	W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Sm^{154}(n,\gamma\beta)$.
Gd	σ_a/σ_a indicates more than one level	B. N. Brockhouse, D. G. Hurst, Phys. Rev. 83, 841(1951).
	σ_a(th n) 35,000 osc	H. Pomerance, Phys. Rev. 83, 641(1951).
	Isotope shift	S. Suwa, Phys. Rev. 86, 247(1952).
$_{64}Gd^{149}_{85}$	τ 9^{d} α 3.0 ic e$^-$ 0.35 a	R. W. Hoff et al., Phys. Rev. 83, 1068(1951). Eu(~30 Mev p,3n), Sm^{147}(~30 Mev α,2n), chem.
$_{64}Gd^{150}_{86}$	τ long α 2.7	S. G. Thompson et al., Phys. Rev. 85, 758A (1952).
	τ >10^{4}y	R. C. Mack et al., Phys. Rev. 86, 633A (1952).
$_{64}Gd^{155}_{91}$	I $\geq$ 3/2 S $\lvert\mu\rvert$ ~0.3 S	S. Suwa, Phys. Rev. 86, 247(1952).
$_{64}Gd^{157}_{93}$	I $\geq$ 3/2 S $\lvert\mu\rvert$ ~0.3 S	S. Suwa, Phys. Rev. 86, 247(1952).
$_{64}Gd^{158?}_{94}$	Capture γ's Gd(th n,γ) 0.080, 0.090, sπ;ce$^-$ 0.185?	C. T. Hibdon, C. O. Muehlhause, Phys. Rev. 83, 235A(1951).
$_{64}Gd^{159}_{95}$	18^{h} produced by Gd(γ)	F. D. S. Butement, Proc. Phys. Soc. (London) A64, 395 (1951).
Tb	σ_a(th n) 44 osc	H. Pomerance, Phys. Rev. 83, 641(1951).
$_{65}Tb^{150}_{95}$	γ 0.085 scin α_K = 1.6 E2	F. K. McGowan, Phys. Rev. 85, 151(1952).
	(~0.9β)(0.085γ) delay 1.8×10^{-9}s	F. K. McGowan, Phys. Rev. 85, 142(1952).
Dy	σ_a(th n) 890 osc	H. Pomerance, Phys. Rev. 83, 641(1951).
	7^{m} α activity formerly assigned to Tb or Gd now assigned to Dy. E_α = 4.2.	S. G. Thompson et al., Phys. Rev. 85, 758A (1952).
$_{66}Dy^{165}_{99}$ 1.25^{m}	γ (0.109) s;ce$^-$ L_{II}/L_{III} = 1.5 (E3)	J. W. Mihelich, Phys. Rev. 87, 646 (1952).
2.4^{h}	γ 0.0951 sπ K:L_I:L_{III} = 6.4:1.0:<0.2	J. W. Mihelich, E. L. Church, Phys. Rev. 85, 690(1952).
	γ 0.095 scin $\alpha_K \leq 2.9$	F. K. McGowan, Phys. Rev. 85, 151(1952).
	$\beta(0.095\gamma)$ delay $<0.8 \times 10^{-9}$s	F. K. McGowan, Phys. Rev. 85, 142(1952).
	τ 2.310 ± 0.002^{h}	R. Sher et al., Phys. Rev. 87, 523(1952). Dy(pile n).
	Capture γ's $Dy^{164}(n,\gamma)$ 0.085 sπ;ce$^-$ 0.108 0.194	C. T. Hibdon, C. O. Muehlhause, Phys. Rev. 87, 222A (1952); ANL-4746 (1951).
Ho	σ_a(th n) 64 osc	H. Pomerance, Phys. Rev. 83, 641(1951).
	σ_t(0.026 – 0.5 ev) graph	S. Bernstein et al., Phys. Rev. 87, 487 (1952).
$_{67}Ho^{166}_{99}$	τ >30^{y} β_1 46% 0.18 a$\beta\gamma$ β_2 46% 0.28 a$\beta\gamma$ β_3 8% 1.1 a γ_1 0.095 scin γ_2 0.212 γ_3 0.280 γ_4 0.725 γ_5 0.830	F. D. S. Butement, Proc. Phys. Soc. (London) A65, 254 (1952). Ho(n,γ); chem. (β_1 or β_2)(γ_4 or γ_5), $\beta_3\gamma_3$, (γ_4,γ_5)(γ_3) Er K x ray.
27.3^{h}	γ 0.081 scin α_K = 1.9 E2	F. K. McGowan, Phys. Rev. 85, 151(1952).
	γ 0.0807 sπ K: L_I: L_{II}:L_{III} = 0.13:<0.1:<0.72:1	J. W. Mihelich, E. L. Church, Phys. Rev. 85, 690(1952).
	τ 27.5^{h} s β^- 15% 0.66 85% 1.84 γ 0.081 s;ce$^-$ ~1.3 a	N. M. Anton'eva et al., Izvest. Akad. Nauk USSR Ser. Fiz. 14, 299 (1950); Chem. Abs. 45, 459 i (1951).
Er	σ_t(0.025 ev) 172 σ_t(0.03 – 0.7 ev) graph Resonance E_0 ~0.45 ev σ_0 ~1700	S. Bernstein et al. Phys. Rev. 87, 487 (1952).

Er	Isotope shifts S (170-168):(168-166): (166-164) = 1:0.9:0.9	K. Murakawa, S. Suwa, Phys. Rev. 85, 683(1952).
$_{68}Er^{165}_{97}$	τ 9.9 ± 0.1^h Ho K,L x rays* No e^-, no γ*	D. N. Kundu et al., Phys. Rev. 87, 203A(1952); *verbal report. Ho(7.4 Mev p); Ho(10 Mev d).
$_{68}Er^{171}_{103}$	γ 0.1128 K/L ~10 0.1179 ~0.5 0.1255 ~2 0.1764 0.2946 ~10 0.3075 ~10 0.4197 sπ; ce$^-$	H. B. Keller, J. M. Cork, Phys. Rev. 84, 1079(1951).
$_{69}Tm^{170}_{101}$	β_1 0.876 sl;$\beta\gamma$ β_2 0.970 sl β_1 F-K plot linear	R. Richmond, H. Rose, Phil. Mag. 43, 367(1952).
	γ 0.0848 sπ K: L_I: L_{II}:L_{III} = 0.29:<0.1:0.83:1	J. W. Mihelich, E. L. Church, Phys. Rev. 85, 690(1952).
	γ 0.085 scin α_K = 1.5 E2	F. K. McGowan, Phys. Rev. 85, 151 (1952).
	γ 0.084 sl K/LM = 0.1 e^-_K/total β = 0.013 $[(0.65\beta)e^-](\theta)$ = const*	K. Siegbahn, Arkiv för Fysik 4, 223 (1952). *Tm_2O_3 source.
$_{71}Lu^{176}_{105}$ 3.75^h	β^- 1.1 1.2 γ 0.089 scin α = large K/L~0.1 E2 No γ with $0.6<E_\gamma<1$ $(1.1\beta)(0.089\gamma)$ delay <$1^{\mu s}$	G. Scharff-Goldhaber et al., Phys. Rev. 85, 734A(1952).
	γ 0.0889 sπ K: L_{II}:L_{III} = 0.24:0.71:1	J. W. Mihelich, E. L. Church, Phys. Rev. 85, 690(1952).
	γ (0.089) scin α_K = 1.2 E2 $\tau = 1.4 \times 10^{-9}$s	F. K. McGowan, Phys. Rev. 87, 542 (1952).
$_{71}Lu^{177}_{106}$	γ 0.112 scin α_K = 0.81 E2 $\tau < 5 \times 10^{-10}$s 0.206 α_K = 0.04 E1 4.5% 0.318 $\gamma\gamma(\theta)$ b = −0.213	F. K. McGowan et al., Phys. Rev. 85, 152(1952).
Hf	Relative abundances* 170, 171 <0.004% 172, 173 <0.005% 175 <0.006%	H. E. Duckworth et al., Phys. Rev. 85, 929(1952). *Assuming Hf^{174} = 0.18%.
	σ_t(0.025 ev) 115 σ_t(0.03 − 1.7 ev) graph Resonance E_0 1.1 ev σ_0 730	S. Bernstein et al., Phys. Rev. 87, 487 (1952).
Hf	σ_t(10.0 ev) 17.0 (120 ev) 13.1 (345 + 2400 ev) 14.4 (2700 ev) 14.8 (3000 ev) 14.8	C. T. Hibdon, ANL-4602 (Mar. 1951).
	Resonances E_0(ev) Isotope 1.1 177 2.3 177 5.7 179,177? 6.4 177 7.6 178 w 8.7 177 w 14 * 177	S. P. Harris, L. M. Bollinger, Phys. Rev. 87, 222A (1952); *verbal report.
$_{72}Hf^{175}_{103}$	K γ's E_γ K/L(ppl) 0.089 ~3 sπ; 0.113 ~10 ce$^-$ 0.228 ~2 (Lu) 0.318 0.342 4.9 0.431	S. B. Burson, W. C. Rutledge, Phys. Rev. 86, 633A(1952); 83, 62, 222A(1951). ANL-4746(1951). Hf^{174}(n,γ).
$_{72}Hf^{179}_{107}$ 19^s	γ 0.161 s;ce$^-$ 0.217 scin	S. B. Burson et al., Phys. Rev. 83, 62, 222A(1951). Hf^{178}(n,γ).
	τ 19^s γ ~0.150 scin α large, M3? 0.215 $e^-\gamma$, $X\gamma$(delay <$0.5^{\mu s}$)	E. der Mateosian, M. Goldhaber, Phys. Rev. 83, 843(1951). Hf^{178}(n,γ).
$_{72}Hf^{180}_{108}$ 5.5^h	τ 5.5^h γ 0.0568 0.330 sπ; 0.0932 0.442 ce$^-$ 0.214 (Hf) $(0.330\gamma)(0.442\gamma)$	S. B. Burson et al., Phys. Rev. 83, 62, 222A(1951). Hf^{179}(n,γ); chem.
$_{72}Hf^{181}_{109}$	β^- 0.420 s γ 0.133 0.481 s; 0.136 0.611 ce$^-$ 0.344 (Ta) $(0.420\beta)e^-$ delay; e$^-$e$^-$	S. B. Burson et al., Phys. Rev. 83, 62, 222A(1951). Hf^{180}(n,γ).
	β^- 0.408 sl E_γ α_K α_{L+M} γ_1 0.130 0.34 0.56 γ_2 0.134 ~3 ~0.4 γ_3 0.340 ~0.1 ~0.02 γ_4 0.474 0.024 0.006 γ_1 and γ_4, E2. γ_2 and γ_3, M1	C. Y. Fan, Phys. Rev. 87, 252(1952).
	γ 0.132 scin α_K = 0.51	F. K. McGowan, ORNL-1278, Dec. 1951.
	$[e^-(0.13\gamma)][e^-(0.47\gamma)](\theta)$ b = −0.32	A. H. Ward, D. Walker Walker, Nature 163, 168(1949).
	$(0.130\gamma)(0.471\gamma)$ e$^-$e$^-$ $(0.130\gamma)(0.337\gamma)$ $(0.134\gamma)(0.337\gamma)$ No βe^-	C. M. Fowler, R. G. Shreffler, Rev. Sci. Instruments 21, 740 (1950).

$_{73}Ta^{180}_{107}$	τ	8.0^h		A. J. Moses and D. S. Martin, Jr., Phys. Rev. 84, 366(1951). $W^{182}(\leq 30$ Mev γ, pn); chem.
	β^-	0.7	a	
$_{73}Ta^{181}_{108}$	q	+5.9	s	B. M. Brown, Phys. Rev. 87, 228A (1952).
$_{73}Ta^{182}_{109}$ 16.4^m	γ	(0.180)	scin	A. W. Sunyar, Phys. Rev. 83, 864(1951). Ta(n,γ).
		$\alpha_K = 0.8$	E3	
111^d	τ	111.2 ± 0.5^d		G. G. Eichholz, L. A. Ficko, Phys. Rev. 86, 794(1952). Ta(pile n).
$_{73}Ta^{183}_{110}$	τ	4.83^d		F. D. S. Butement, Proc. Phys. Soc. (London) A64, 395 (1951). W(γ); chem.
$_{73}Ta^{183?}_{110}$	τ	6.0^d		A. J. Moses and D. S. Martin, Jr., Phys. Rev. 84, 366(1951). W(≤ 30 Mev γ); chem.
	β^-	0.6	a	
$_{73}Ta^{185}_{112}$	τ	48^m		A. J. Moses and D. S. Martin, Jr., Phys. Rev. 84, 366(1951). W(≤ 30 Mev γ); chem.
	β^-,e$^-$?	0.15	a	
	β^-	1.6	a	
	No $\beta\beta$ for delay $<10^{\mu s}$			
W	σ_t(2700 ev)	8.45		C. T. Hibdon, ANL-4602 (Mar. 1951).
	(3000 ev)	8.31		
	σ_t(14 Mev)	4.62		L. S. Goodman, ANL-4602 (Mar. 1951).
	Isotope shifts $\Delta(W^{186} - W^{184}):\Delta(W^{184} - W^{182}):\Delta(W^{182} - W^{180}) = 1:1.13:1.02$			J. A. Vreeland, K. Murakawa, Phys. Rev. 83, 229A(1951).
$_{74}W^{180}_{106}$	σ_a(th n)	30	osc	H. Pomerance, ORNL-1164(1951); priv. comm. (1952).
	σ(th n,γ)140^dW	≈ 2		M. Lindner, Phys. Rev. 84, 240(1951).
$_{74}W^{181}_{107}$	τ	$\sim 120^d$		M. Lindner, Phys. Rev. 84, 240(1951). W(n,γ).
	X-rays, hard γ's			
$_{74}W^{182}_{108}$	σ_a(th n)	19.2	osc	H. Pomerance, ORNL-1164(1951); priv. comm. (1952).
$_{74}W^{183}_{109}$	μ	+0.08	S	J. A. Vreeland, K. Murakawa, Phys. Rev. 83, 229A(1951).
	σ_a(th n)	10.9	osc	H. Pomerance, ORNL-1164(1951); priv. comm. (1952).
$_{74}W^{184}_{110}$	σ_a(th n)	1.97	osc	H. Pomerance, ORNL-1164(1951); priv. comm. (1952).
$_{74}W^{186}_{112}$	σ_a(th n)	34.1	osc	H. Pomerance, ORNL-1164(1951); priv. comm. (1952).
$_{74}W^{187}_{113}$	σ(th n,γ)65^dW	80		M. Lindner, Phys. Rev. 84, 240(1951).
Re	Resonances* E_0 2.1, 5.7, 7.1, 10.9(Re^{187}), 18			S. P. Harris, Phys. Rev. 83, 235A(1951) and *verbal report.
$_{75}Re^{185}_{110}$	σ_a(th n)	100	osc	H. Pomerance, ORNL-1164(1951); priv. comm. (1952).
$_{75}Re^{187}_{112}$	σ_a(th n)	63	osc	H. Pomerance, ORNL-1164(1951); priv. comm. (1952).
$_{75}Re^{188}_{113}$	β^- complex?	2.07	sl	R. Richmond et al., Proc. Phys. Soc. (London) A65, 484 (1952). Re(slow n). *Photon %'s per disintegration.
	γ_1 70%*	0.152	pe$^-$,ce$^-$	
		$\alpha_K = 0.046$	E1 ?	
		K/L = 0.42	E2 ?	
	γ_2 3%	0.476	pe$^-$	
	γ_3 6%	0.638	pe$^-$	
	γ_4 5%	0.933	pe$^-$	
	γ_5 5%	1.32	a	
	$(\gamma_4)(\gamma_2,\gamma_3)$; $(\gamma_1)(\gamma_2,\gamma_3)$; $(\gamma_1)(\gamma_4,\gamma_5)$ $(>1.5\beta)(\gamma_1)$; $(\beta)(>0.15\gamma)$			
$_{75}Re^{189?}_{114}$	$\tau(\sim 0.2\beta^-)$	$\sim 150^d$		M. Lindner, Phys. Rev. 84, 240(1951). Re(th n,γ); chem.
	$\tau(\sim 0.75\beta^-)$	$>5^y$		
$_{76}Os^{184}_{108}$	σ(th n,γ)97^dOs	~ 20		M. Lindner, Phys. Rev. 84, 240(1951).
$_{76}Os^{185}_{109}$	K X-rays/L X-rays	= 1.5		M. M. Miller, R. G. Wilkinson, Phys. Rev. 83, 1050(1951).
$_{76}Os^{189}_{113}$	I	3/2	S	K. Murakawa, S. Suwa, Phys. Rev. 87, 1048(1952); 83, 1258(1951).
	μ	+0.7		
	q	+2.0		
$_{76}Os^{191}_{115}$	β^-	0.143	s	E. Kondaiah, Arkiv för Fysik 4, 81 (1952); 3, 47(1951). Os(pile n). Author assigns to Os^{193}.
	γ	0.042	ce$^-$	
		L/M = 1.8		
		0.128		
		$\alpha_K \sim 0.5$	E2	
		K/L = 2.1		
	β^-e^- indicate one β^-			
	γ	0.124	scin	S. A. E. Johansson, Arkiv för Fysik 3, 533(1952). Os(pile n).
		$\alpha_K = 3.2$		
	Author assigns to Os^{193}			
$_{76}Os^{193}_{117}$	σ(th n,γ)700^dOs	190*		M. Lindner, Phys. Rev. 84, 240(1951). [*Based on $\sigma(Os^{192}) = 1.6$.]
$_{76}Os^{194}_{118}$	τ	$\sim 700^d$		M. Lindner, Phys. Rev. 84, 240(1951). Os(th n,γ)(th n,γ).
	p 19.0^hIr			
Ir	σ_a(th n)	440	osc	H. Pomerance, Phys. Rev. 83, 641(1951).
$_{77}Ir^{191}_{114}$	I	3/2	S	K. Murakawa, S. Suwa, Phys. Rev. 87, 1048(1952).
	μ	+0.16		
	q	+1.0		

$_{77}Ir^{192}_{115}$ 70^d	τ 78^d 9 γ's assigned to β^- decay, 4 γ's to K	J. M. Cork et al., Phys. Rev. 83, 222A (1951). Ir(n,γ).
	τ 74.37^d	J. Kastner, Can. J. Phys. 29, 480(1951).
	β^- 0.66 s γ 4%* 0.207 s;pe$^-$ 3% 0.277 w 0.432 80% 0.296 130% 0.467 80% 0.308 6% 0.478 100% 0.315 10% 0.586 4% 0.401 17% 0.606 1.5% 0.417 6% 0.614	V. S. Shpinel, N. V. Forafontov, Zhur. Eksptl'. i Teoret. Fiz. 21, 1376(1951). *Relative photon %'s.
	New γ's in β^- decay* 0.16 0.76 ~0.43 0.88 0.57 ? 0.9−1.2 0.74 scin,$\gamma\gamma$ E_{dis} = 1.58 ± 0.03 scin	K. I. Roulston, R. W. Pringle, Phys. Rev. 87, 930 (1952). *In addition to γ's of J. M. Cork et al., Phys. Rev. 82, 258 (1951).
$_{77}Ir^{193}_{116}$	I ½ S μ +0.17 q +1.0	K. Murakawa, S. Suwa, Phys. Rev. 87, 1048(1952).
$_{77}Ir^{194}_{117}$	β^- 0.3%* (0.48) $\gamma\gamma(\theta)$ indicates 2,1,0 or 2,2,0	C. E. Whittle, P. S. Jastram, Phys. Rev. 87, 203A (1952); *verbal report.
	γ 0.3275 s;ce$^-$	J. M. Cork et al., Phys. Rev. 83, 222A (1951). Ir(n,γ).
	No γ a	M. Lindner, Phys. Rev. 84, 240(1951).
$_{77}Ir^{195}_{118}$?	τ 2.3^h β^- ~1 a Not parent of 18^h Pt^{197}	D. Christian et al., Phys. Rev. 86, 946 (1952). Pt(≤30 Mev γ); chem. Assignment from yield.
$_{77}Ir^{197}_{120}$?	τ 7^m	D. Christian et al., Phys. Rev. 86, 946 (1952). Pt(≤30 Mev γ); chem. Assignment from yield
Pt	Relative abundances* 188, 189 <0.002% 191 <0.004% 193 <0.009% 197 <0.010% 199 <0.008% 200 <0.007%	H. E. Duckworth et al., Phys. Rev. 85, 929(1952). *Assuming Pt^{190} = 0.012%.
$_{78}Pt^{195}_{117}$	τ 3.8^d γ_1 90% 0.029 sl;ce$^-$ γ_2 90% 0.097 e$^-$e$^-$ γ_3 10% (0.126) γ_4 100% 0.129 α_K α_L α_M γ_1 ≥6 ≥1.3 γ_2 7.4 1.3 0.3 γ_4 ~∞ K/L = 0.26	A. de-Shalit et al., Helv. Phys. Acta 25, 279(1952). Pt(d), Pt(n); chem. Assignment from Au^{195} γ's, q.v.
	τ ~4^d γ 0.0991 sx;ce$^-$ 0.1298 (Pt) K/L = 0.1	J. M. Cork et al., Phys. Rev. 86, 415 (1952). Pt(n,γ); chem.
$_{78}Pt^{195*}_{117}$	τ_1 4.4^d e$^-$ 0.12 a	B. C. Haldar, Phys. Rev. 87, 158(1952). Pt(n,γ); chem. *Author assigns to Pt^{193}.
$_{78}Pt^{197}_{119}$? 80^m	τ 88^m ce$^-$	D. Christian et al., Phys. Rev. 86, 946 (1952). Pt(≤70 Mev γ); chem. Not produced by Au(≤70 Mev γ).
18^h	τ_2 19^h β^- 0.62 a	B. C. Haldar, Phys. Rev. 87, 158(1952). Pt(n,γ); chem.
	β^- 1.5% (0.48) sl 98.5% 0.67 γ 100% 0.077 ce$^-$, 1.5% 0.191 pe$^-$ e$^-$(0.191γ) e$^-$(0.077γ)	H. Schneider et al., Helv. Phys. Acta 25, 259(1952).
	γ 0.0774 sx;ce$^-$ 0.1912 (Au) K/L = 6.0	J. M. Cork et al., Phys. Rev. 86, 415 (1952). Pt(n,γ); chem.
Au	σ_a(th n) 7.56	C. T. Hibdon, ANL-4602 (Mar. 1951).
$_{79}Au^{191}_{112}$	τ 18.0^h d 12.4^h Hg	J. H. Moon, A. L. Thompson, Phys. Rev. 83, 892A(1951).
$_{79}Au^{192}_{113}$	τ 4.13^h d 5.7^h Hg	R. W. Fink, E. O. Wiig, J. Am. Chem. Soc. 74, 2457(1952).
$_{79}Au^{195}_{116}$	γ 35% 0.029 sl;e$^-$e$^-$ 100% 0.097 3.5% 0.126 K/L<1.8	A. de-Shalit et al., Helv. Phys. Acta 25, 279(1952). Pt(d); chem.
	No ce$^-$ from 1 to 10 kev sl;e$^-$e$^-$	H. Schneider et al., Helv. Phys. Acta 25, 259(1952).
$_{79}Au^{196}_{117}$ 5.55^d	β^- 0.270 s γ 0.332 s;ce$^-$ 0.354 0.426 α_L~7×10^{-3} (Hg) L/M + N ~ 4 (0.270β^-)(0.426γ) No 0.175 γ observed	P. Staehelin, Phys. Rev. 87, 374(1952). Pt(d).

$_{79}Au^{190}_{117}$ 5.55^d	$\gamma\gamma(\theta)$ indicates I = 2,2,0	R. M. Steffen, D. M. Roberts, Phys. Rev. 83, 222A(1951).
$_{79}Au^{197}_{118}$	μ +0.136 S	F. G. Kelly, Proc. Phys. Soc. (London) A65, 250(1952).
	q ~+0.5 S	W. von Siemens, Naturwissenschaften 38, 455(1951).
$_{79}Au^{198}_{119}$	No K capture	C. D. Broyles, S. K. Haynes, Phys. Rev. 87, 174A(1952).
	K <0.2	E. der Mateosian, A. Smith, Phys. Rev. 87, 193A(1952); verbal report.
	β^- 0.97 sl γ (0.411) ce$^-$ $\alpha_K = 0.03$ $\alpha_L = \alpha_M = 0.013$	C. Y. Fan, Phys. Rev. 87, 252(1952). Au(pile n).
	β^- 0.290 sl,$\beta\gamma$ $\gamma \sim 1\%$ 0.680 scin ~0.2% 1.09 scin (0.680γ)(0.290β and e$^-$ of 0.411γ)	A. R. Brosi et al., Phys. Rev. 84, 586(1951).
	γ 0.411 sl;ce$^-$ $\alpha_K = 2.75 \times 10^{-2}$ K/L = 2.2 No ce$^-$ with E <0.328	O. Huber et al., Helv. Phys. Acta 25, 3 (1952).
	γ (0.411) E2 $\alpha_K = 0.0318$* $\alpha_L = 0.0103$* $\alpha_M = 0.0031$* *Neglecting β^- branching; assuming K capture ~5%.	L. Simons, Phys. Rev. 86, 570(1952).
	γ (0.411) s;ce$^-$ $L_{II}/L_{III} = 2.5$ (E2)	J. W. Mihelich, Phys. Rev. 87, 646 (1952).
	γ (0.411) sl;ce$^-$ $\tau < 3 \times 10^{-11s}$	R. L. Graham and R. E. Bell, Phys. Rev. 84, 380(1951).
	β(0.411γ) delay <0.4×10^{-9s}	F. K. McGowan, Phys. Rev. 85, 142(1952).
	No ce$^-$ from 1 to 10 kev sl;e$^-$e$^-$	H. Schneider et al., Helv. Phys. Acta 25, 259(1952).
	σ(th n,γ)3.3^d Au = 3.8×10^4	P. M. Sherk and R. D. Hill, Phys. Rev. 83, 1097(1951).
$_{79}Au^{199}_{120}$	τ 3.16^d β_1 20% (0.242) sl β_2 73% 0.291 β_3 7% 0.443 γ_1 5% 0.051 ce$^-$, γ_2 78% 0.157 pe$^-$, γ_3 15% 0.208 e$^-$e$^-$ γ_1 α_K $\geq$1.8 α_L $\geq$0.5 α_M γ_2 0.33 0.50 0.17 γ_3 0.98 0.17 0.07	A. de-Shalit et al., Helv. Phys. Acta 25, 279(1952). Pt(n,$\gamma\beta$); chem.
	β_1 0.25 s$\beta\gamma$ β_2 0.30 s$\beta\gamma$ β_3 0.46 s (β_1)(0.16γ)delay = 2.4×10^{-9s} (β_2)(0.21γ)delay <2×10^{-10s}	R. E. Bell et al., Can. J. Phys. 30, 35(1952); Phys. Rev. 84, 380(1951).
	β_1^- 22.5% 0.250 β_2^- 73.5% 0.300 sπ β_3^- 4% 0.460	P. M. Sherk and R. D. Hill, Phys. Rev. 83, 1097(1951).
	γ 3.5% 0.050 sπ; 77% 0.159 ce$^-$, 19% 0.209 sl; pe$^-$	α_L = 6 α_K = 0.19; K/L = 0.61 α_K = 0.54; K/L = 5.4
	γ_1 0.050 sl,scin γ_2 0.158 γ_3 0.208 γ_2 α_K 0.24 α_L 0.33 α_M 0.10 γ_3 ~0.6 ~0.1 ~0.03 βe_1^-, βe_2^-, βe_3^-, $e_1^- e_2^-$, no $e_2^- e_3^-$ [(0.10β)e_2^-](θ) = const*	K. Siegbahn, Arkiv för Fysik 4, 223 (1952). *$AuCl_3$ source.
	γ 0.0498 sπ;ce$^-$ 0.1585 (Hg) K/L = 0.56, L/M = 3.6 0.2083 (Hg) K/L = 4.5	J. M. Cork et al., Phys. Rev. 86, 415 (1952). Pt(n,$\gamma\beta$); chem
	γ (0.159) s;ce$^-$ L_{II}/L_{III} = 1.6 (E2)	J. W. Mihelich, Phys. Rev. 87, 646 (1952).
	No ce$^-$ from 1 to 10 kev sl;e$^-$e$^-$	H. Schneider et al., Helv. Phys. Acta 25, 259(1952).
$_{79}Au^{200}_{121}$	48^m produced by Hg(γ); chem	F. D. S. Butement, Proc. Phys. Soc. (London) A64, 395 (1951).
Hg	σ_s(thermal) 26.56 σ_t(10.0 ev) 13.93 (19.5 ev) 13.3 (2700 ev) 10.4 (3000 ev) 10.7	C. T. Hibdon, ANL-4602 (Mar. 1951).
	σ_a(th n) 354 osc	J. Ailloud et al., J. phys. radium 13, 171(1952).
$_{80}Hg^{\leq 191}_{\leq 111}$	τ 2.0^h	R. W. Fink, E. O. Wiig, J. Am. Chem. Soc. 74, 2457(1952). Au(96 Mev p); chem.

$_{80}Hg^{191}_{111}$	τ 12.4^h K Soft, converted γ's Mass from daughters		J. H. Moon, A. L. Thompson, Phys. Rev. 83, 892A(1951). Au(60 Mev p); chem.
$_{80}Hg^{192}_{112}$	τ 8.4^h K Soft, converted γ's Mass from daughters		J. H. Moon, A. L. Thompson, Phys. Rev. 83, 892A(1951). Au(55 Mev p); chem.
	τ 5.7^h β^+ 1.18 a,s ce$^-$ 0.18 s γ 1.39 a parent of 4.0^{h}Au		R. W. Fink, E. O. Wiig, J. Am. Chem. Soc. 74, 2457(1952). Pt(36 Mev α); chem. Au(60 Mev p); chem.
$_{80}Hg^{193}_{113}$	τ 10^h No β^+ K x rays parent of 15.8^{h}Au		R. W. Fink, E. O. Wiig, J. Am. Chem. Soc. 74, 2457(1952). Au(55 Mev p); chem.
	τ_1 14.5^h τ_2 29.0^h K Soft, converted γ's Mass from daughters		J. H. Moon, A. L. Thompson, Phys. Rev. 83, 892A(1951). Au(45 Mev p); chem.
$_{80}Hg^{194}_{114}$	Not produced by Pt(36 Mev α) Au(35-to 96-Mev p) 39.5^h Au^{194} not found		R. W. Fink, E. O. Wiig, J. Am. Chem. Soc. 74, 2457(1952); J. H. Moon, A. L. Thompson, Phys. Rev. 83, 892A (1952).
$_{80}Hg^{195}_{115}$	τ 31^h No β^+ s K x rays a		R. W. Fink, E. O. Wiig, J. Am. Chem. Soc. 74, 2457(1952). Au(30 Mev p); chem.
	τ 38^h K Soft, converted γ's Mass from daughters		J. H. Moon, A. L. Thompson, Phys. Rev. 83, 892A(1951). Au(25 Mev p); chem.
$_{80}Hg^{197}_{117}$ 65^h	τ 66.4^h γ 0.0776 0.1914 K/L ~ 9	sπ;ce$^-$ (Au)	J. M. Cork et al., Phys. Rev. 85, 386 (1952). Hg(pile n).
25^h	γ 0.1343 sπ;ce$^-$ K/L < 0.1 (Hg) 0.1654 K/L ~ 0.25 (Hg)		J. M. Cork et al., Phys. Rev. 85, 386 (1952). Hg(pile n).
	No ce$^-$ from 1 to 10 kev	s|;e$^-$e$^-$	H. Schneider et al., Helv. Phys. Acta 25, 259(1952).
$_{80}Hg^{199}_{119}$	μ 0.56 S		E. W. Foster, Proc. Roy. Soc. (London) 208A, 367(1951).
$_{80}Hg^{200}_{120}$	Capture γ Hg^{199}(n,γ) ~0.29 sπ;ce$^-$		C. T. Hibdon, C. O. Muehlhause, Phys. Rev. 87, 222A (1952).
$_{80}Hg^{201}_{121}$	q 0.3 S		K. Murakawa, S. Suwa, J. Phys. Soc. Japan 5, 429(1950).
$_{80}Hg^{203}_{123}$	τ 47.9^d γ 0.2795 sπ;ce K/L ~ 10		J. M. Cork et al., Phys. Rev. 85, 386 (1952). Hg(pile n).
	β^- 0.210 pc γ 0.278 sπ,pe$^-$ α_K = 0.25 K/L = 3.7		H. W. Wilson, S. C. Curran, Phil. Mag. 42, 762(1951).
	$\beta(0.28\gamma)$ delay < 0.4 × 10^{-9}s		F. K. McGowan, Phys. Rev. 85, 142(1952).
	γ 0.286 scin α_K = 0.21 E3		S. A. E. Johansson, Arkiv för Fysik 3, 533(1952). Hg(pile n).
Tl	Resonances E_0(ev) Isotope (270) 203 (1,300) 203 10,000 205		R. H. Rohrer, Phys. Rev. 87, 177A (1952).
$_{81}Tl^{199}_{118}$	γ's (kev) sπ,ce$^-$ 47 157 332 78 206 454 103 245 490		H. I. Isreal, R. G. Wilkinson, Phys. Rev. 83, 1051(1951). Au(α,2n), chem. No β^+.
$_{81}Tl^{200}_{119}$	γ's (kev) sπ,ce$^-$ 365 622 1,210 577 829 1,360		H. I. Isreal, R. G. Wilkinson, Phys. Rev. 83, 1051(1951). Au(α,n), chem. No β^+.
$_{81}Tl^{202}_{121}$	τ 12.5^d γ 0.43 scin		H. C. Martin, B. C. Diven, Phys. Rev. 86, 565(1952). Tl(n,2n)
$_{81}Tl^{203}_{122}$	σ_a(th n) 11.0 osc		H. Pomerance, ORNL-1164(1951); priv. comm. (1952).
	σ[Tl^{203}(n,2n)12.5^{d}Tl] Yield for $E_n \simeq 12 - 18$		H. C. Martin, B. C. Diven, Phys. Rev. 86, 565(1952).
$_{81}Tl^{204}_{123}$	K 1.5% scin E_{dis} (K)~0.4		E. der Mateosian, A. Smith, Phys. Rev. 87, 193A(1952); verbal report.
	β^- 0.765 s ΔI = 2, yes shape Hg x ray crit a X/β^- 0.02 No γ		L. Lidofsky et al., Phys. Rev. 87, 204A(1952); 87, 391(1952).
	Hg K x rays scin		A. C. G. Mitchell, R. S. Caird, Phys. Rev. 87, 388(1952).
$_{81}Tl^{205}_{124}$	σ_a(th n) 0.77 osc		H. Pomerance, ORNL-1164(1951); priv. comm. (1952).
$_{81}Tl^{206}_{127}$	γ_X 2.61425 ± 0.00050 Hρ = 9986.7 ± 1.5 gauss-cm (based on p resonance)		G. Lindström, Phys. Rev. 87, 678(1952).

$_{81}Tl^{208}_{127}$	γ 2.6147 ± 0.0006 H_ρ = 9988 ± 2 gauss cm (based on p resonance)		W. L. Brown, Phys. Rev. 83, 271(1951).
	H_ρ(L) = 2607.17 ± 0.30 γ_L 510.85 ± 0.08 kev		G. Lindström, Arkiv Fysik 4, 1(1951).
	e^-(M) shown to be double $e^-_{L_1}(\gamma_L) + e^-_K(\gamma_M)$		D. A. Silverston, Proc. Phys. Soc., (London) A65, 344 (1952).
Pb	σ_a(th n) 0.162	osc	D. J. Littler, E. E. Lockett, priv. comm. (1952).
	σ_t(14 Mev) 5.0		L. S. Goodman, ANL-4602 (Mar. 1951).
	σ_t(156 Mev) 3.50		A. E. Taylor et al., Phil. Mag. 42, 751(1951).
	σ_t(400 Mev) 2.69		V. A. Nedzel, J. Marshall, Phys. Rev. 86, 604A (1952).
	Isotope shift (204-206)/(206-208) = 0.85 (206-207)/(207-208) = 0.66 for PbI, λ = 4058		T. E. Manning et al., Phys. Rev. 78, 417 (1950).
	Isotope shift (204-206)/(206-208) = 0.89 (206-207)/(207-208) = 0.62 for PbI, λ = 4058		K. Murakawa, S. Suwa, J. Phys. Soc. Japan 5, 382(1950).
	Isotope shift (208-210)/(206-208) = 1.74 for PbI, λ = 4058		P. Brix et al., Z. Physik 133, 192 (1952).
$_{82}Pb^{206}_{124}$	σ_a(th n) 0.026	osc	D. J. Littler, E. E. Lockett, priv. comm. (1952).
$_{82}Pb^{207}_{125}$	τ_1 0.82^s		J. Lascoux and G. Vendryes, Compt. rend. 233, 858, (1951).
	σ_a(th n) 0.69	osc	D. J. Littler, E. E. Lockett, priv. comm. (1952).
$_{82}Pb^{209}_{127}$	β^- 0.64	s	A. H. Wapstra, Phys. Rev. 86, 562(1952).
	No γ, no K x ray No e^- with E_{e^-} >0.030		
$_{82}Pb^{210}_{128}$	β^- 0.017	pc	A. A. Jaffe, S. G. Cohen, Phys. Rev. 86, 1041(1952).
	≥10% 0.0556		
	β^- 0.018	scin	R. C. Bannerman, S. C. Curran, Phys. Rev. 85, 134(1952).
	γ 0.0467 $(0.0467\gamma)\beta^-$ $\gamma\gamma$ for E_γ = 16 – 30 kev		
	β^- 0.018 E_{dis} 0.065	pc	G. M. Insch et al., Phys. Rev. 85, 805 (1952).
$_{82}Pb^{210}_{128}$	Energy of >90% of β^- is <5 kev	aβe$^-$	J. Teillac et al., J. phys. radium 13, 143(1952).
	γ 7.8 kev L x rays α_1 100%* 10.8 kev β_4 13.0 kev γ_1 10%* 15.3 kev No $L_I - L_{II}N$ transitions	pc	S. G. Cohen, A. A. Jaffe, Phys. Rev. 86, 800(1952). *Relative intensities.
	γ 0.0467 α_L = 13.5 Bi Auger lines	sl	D. K. Butt, W. D. Brodie, Proc. Phys. Soc. (London) 64A, 791(1951).
	γ 100% 0.0464 ce$^-$'s of other γ's <1%	sπ;ce$^-$	J. M. Cork et al., Phys. Rev. 83, 681 (1951).
	Coincidences stopped by ~0.3 mg/cm^2 (both G-M's) ~1.8 mg/cm^2 (one G-M) Conclude E_β < 8 kev		P. Falk-Vairant et al., Compt. rend. 233, 1025(1951).
$_{82}Pb^{212}_{130}$	H_ρ(I) = 1754.01 ± 0.20 H_ρ(F) = 1388.56 ± 0.15 γ_1 238.63 ± 0.04 kev		G. Lindström, Arkiv Fysik 4, 1(1951).
	Hρ(F) 1388.5 ± 0.3 Hρ(I) 1753.9 ± 0.4	sl	H. Craig, Phys. Rev. 85, 688(1952).
	γ 0.238 K : L_I : L_{II} : L_{III} = 100 : 15 : 0.75 : 0.15 K : M : N = 100 : 3.2 : 0.9		V. S. Shpinel, N. V. Forafontov, Doklady Akad. Nauk USSR 72, 49(1950). Chem. Abs. 1877f (1951).
	γ(F) (0.238) L_I/L_{II} = 18 (Bi) M_I/M_{II} = 4.3	s;ce$^-$	D. A. Silverston, Proc. Phys. Soc., (London) A65, 344 (1952).
	(0.33β)(0.24γ)delay <10^{-10}s		R. E. Bell et al., Can. J. Phys. 30, 35(1952).
	$[0.17\beta][e^-_K(0.24\gamma)](\theta)$ = const		K. Siegbahn, Arkiv för Fysik 4, 223 (1952).
$_{82}Pb^{214}_{132}$	γ 0.0529 0.2946 0.2415 0.3509	sπ; ce$^-$	J. M. Cork et al., Phys. Rev. 83, 681 (1951).
	E_γ K* L_I* M_I* N_I* 0.240 415 60 17 0.294 480 75 20 0.350 540 95 30 5	sπ	S. Kageyama, J. Phys. Soc. (Japan) 6, 285 (1951). *Intensities of ce$^-$ lines relative to I(K line of 0.606γ of RaC) = 40.
Bi	σ_t(14 Mev) 5.13		L. S. Goodman, ANL-4602 (Mar. 1951).
$_{83}Bi^{203}_{120}$	α ~4.85 α/K ~10^{-7}	pc	D. C. Dunlavey, G. T. Seaborg, Phys. Rev. 85, 757A(1952). Pb(60 Mev p); chem.

$_{83}Bi^{207}_{124}$	γ ~100% 0.56	scin	M. A. Grace, J. R. Prescott, Phys. Rev. 84, 1059(1951).
	~100% 1.1		
	$\gamma\gamma$, Pb K x-ray		
$_{83}Bi^{210}_{127}$ long	α 4.93		H. B. Levy, I. Perlman, Phys. Rev. 85, 758A (1952). Bi(n,γ); ms.
4.85	τ 5.02 ± 0.02^{d}		F. Begemann, F. G. Houtermans, Z. Naturforsch. 7a, 143(1952).
	Continuous γ spectrum $\gamma(E_\gamma > 0.09)/\beta^- = 0.0016$		L. Madansky, F. Rasetti, Phys. Rev. 83, 187(1951).
$_{83}Bi^{211}_{128}$	α 82.6% (6.621)	ppl	G. Vieira, L. Salgueiro, Compt. rend. 234, 1765 (1952).
	17.4% 6.274		
	γ (0.35)		J. Teillac et al., Compt. rend. 234, 1051 (1952).
	$\alpha_K = 0.18$		
	K/L = 5.5		
$_{83}Bi^{212}_{129}$	α 6.046	s	E. R. Collins et al., Nature 167, 682 (1951).
	6.090		
	β^- 66.0%	ppl	S. Tokunaga, Mem. Coll. Sci. Univ. Kyoto 26A, 109 (1950).
	α 34.0%		
	α to 0.608 level 0.016% of α's		A. Rytz, Compt. rend. 233, 790(1951).
	Hρ(A) 533.66 ± 0.12	sl	H. Craig, Phys. Rev. 85, 688(1952).
	$\gamma(H_a)$ 0.2946	s;ce$^-$ (Tl)	D. A. Silverston, Proc. Phys. Soc., (London) A65, 344 (1952).
	γ 0.287		V. S. Shpinel, R. I. Moshkina, Zhur. Eksptl'. i Teoret. Fiz. 21, 1127(1951). Phys. Abs. 55, 6038 (1952).
	$\tau > 10^{-13}$s		
	No Doppler broadening observed		
	(6.04α)(0.04γ)(θ)		L. A. Kulchitskiĭ, Doklady Akad. Nauk. USSR 73, 1153(1950). Phys. Abs. 54, 2963 (1951).
	I = 1,2,1 50%		
	I = 1,3,1 50%		
	suggests that 0.040 level is double		
$_{83}Bi^{214}_{131}$	γ 0.291	s;pe$^-$	K. C. Mann, M. J. Ozeroff, Canad. J. Res. A27, 164(1949). *Relative photon %'s.
	0.352		
	9%* 0.426		
	4%* 0.450		
	14%* 0.496		
	74%* 0.607		
	13%* 0.781		
	9%* 1.12		
	23%* 1.40		
	100%* 1.77		
	25%* 2.21		
	2.40	Cpt	

$_{83}Bi^{214}_{131}$	γ 0.0625 * 1.122 **	sτ; ce$^-$	J. M. Cork et al., Phys. Rev. 83, 681 (1951). *Converted in Tl. **Converted in Po.
	0.1911 * 1.241 **		
	0.609 1.419		
	0.769 ** 1.766		
	0.935		
	γ 90% 0.606	sτ; Cpt	S. Kageyama, J. Phys. Soc. Japan 7, 93 (1952). *Value of 47L24 in Nuclear Data should read 0.32 not 3.2.
	13% 0.766		
	11% 0.933		
	26% 1.120		
	10% 1.238		
	9% 1.379		
	7% 1.520		
	32% 1.761		
	2%* 1.820		
	10% 2.200		
	5% 2.420		
	2.090?		
$_{84}Po^{200}_{116}$	τ 11^{m}		D. G. Karraker et al., Phys. Rev. 83, 390 (1951). Bi(100 Mev p); chem. p 27^{h}Tl.
	K predominant		
	α 5.84	ic	
$_{84}Po^{201}_{117}$	τ 18^{m}		D. G. Karracker et al., Phys. Rev. 83, 390(1951). Bi(100 Mev p); chem. p 72^{h}Tl.
	K predominant		
	α 5.70	ic	
$_{84}Po^{206}_{122}$	α 5.21	ic	D. G. Karraker et al., Phys. Rev. 83, 390 (1951).
$_{84}Po^{207}_{123}$	α 5.10	ic	D. G. Karraker et al., Phys. Rev. 83, 390 (1951).
$_{84}Po^{208}_{124}$	α 5.10	ic	D. G. Karraker et al., Phys. Rev. 83, 390 (1951).
$_{84}Po^{209}_{125}$	α 4.86	ic	D. G. Karraker et al., Phys. Rev. 83, 390 (1951).
$_{84}Po^{210}_{126}$	α 5.304	s	E. R. Collins et al., Nature 167, 682 (1951).
	α 5.298	EA	W. J. Sturm, V. Johnson, Phys. Rev. 83, 542(1951).
	Based on Li(p,n) threshold = 1.882		
	γ 0.784	sτ;ce$^-$	J. M. Cork et al., Phys. Rev. 83, 681 (1951).
	γ 0.804	scin	R. W. Pringle et al. Phys. Rev. 87, 384 (1952).
	No (0.804 γ)X		
	Pb L x ray/$\alpha = 2.2 \times 10^{-4}$		M. Riou, J. phys. radium 13, 244 (1952).
	Pb K x ray/$\alpha = 1.6 \times 10^{-4}$	crit a	
	$(0.80\gamma)/\alpha = 1.6 \times 10^{-5}$	a	
	Pb L x ray/$\alpha = 2.9 \times 10^{-4}$	pc	W. Rubinson, W. Bernstein, Phys. Rev. 86, 545(1952).

$_{84}Po^{210}_{126}$	e^- ejection by α's Pb K x ray*/0.800γ = 0.13 Pb K x ray*/α = 2.0×10^{-6} No (0.800γ) X (0.025 – 2.5γ)/(0.800γ)<0.1		scin	W. C. Barber, R. H. Helm, Phys. Rev. 86, 275(1952). *Assuming all radiation of ~76 kev to be Pb K x ray.
	$\alpha\gamma(\theta)$ indicates E2 γ $\alpha\gamma$ delay $<10^{-9s}$		scin	S. DeBenedetti, G. H. Minton, Phys. Rev. 85, 944(1952); 85, 726A(1952).
$_{84}Po^{212}_{128}$	α 10^{6}* 8.805 35* 9.522 20* 10.454 170* 10.574			A. Rytz, Compt. rend. 233, 790(1951). *Relative intensity.
	α 8.785		s	E. R. Collins et al., Nature 167, 682 (1951).
$_{84}Po^{214?}_{130}$	γ 0.4575		sπ;ce$^-$	J. M. Cork et al., Phys. Rev. 83, 681 (1951). In Ra^{226}, not Pb^{210} source.
$_{84}Po^{214}_{130}$	α 7.683 Based on Li(p,n) threshold = 1.882		EA	W. J. Sturm, V. Johnson, Phys. Rev. 83, 542(1951).
$_{85}At^{211}_{126}$	α 5.85		ic	F. F. Momyer et al., Phys. Rev. 86, 805 (1952).
$_{86}Rn^{209}_{123}$	τ 31^m K ~85% α ~15% 6.02		ic	F. F. Momyer et al., Phys. Rev. 86, 805 (1952). Th(340 Mev p).
$_{86}Rn^{210}_{124}$	τ 2.7^h K ~10% α ~90% 6.02		ic	F. F. Momyer et al., Phys. Rev. 86, 805 (1952). Th(340 Mev p).
$_{86}Rn^{211}_{125}$	τ 16^h K 74% α 26% 5.82		ic	F. F. Momyer et al., Phys. Rev. 86, 805 (1952). Th(340 Mev p).
$_{86}Rn^{212}_{126}$	τ 23^m K <1% α >99% 6.23		ic	F. F. Momyer et al., Phys. Rev. 86, 805 (1952). Th(340 Mev p).
$_{86}Rn^{215}_{129}$	α 8.6		ic	W. W. Meinke et al., Phys. Rev. 85, 429 (1952).
$_{86}Rn^{221}_{135}$	τ 24^m β^- ~75% α ~25%			F. F. Momyer et al., Phys. Rev. 86, 805 (1952). Th(100 Mev p).
$_{86}Rn^{222}_{136}$	τ 3.825 ± 0.0005^d			J. Tobailen, Compt. rend. 233, 1360(1951). Differential ic's.
$_{87}Fr^{<211}_{<124}$	τ $<5^m$ for all isotopes <211			F. F. Momyer et al., Phys. Rev. 86, 805 (1952).
$_{87}Fr^{211}_{124}$	τ 2 to 5^m K/α large			F. F. Momyer et al., Phys. Rev. 86, 805 (1952).
$_{87}Fr^{212}_{125}$	α 6.36		ic	F. F. Momyer et al., Phys. Rev. 86, 805 (1952).
$_{87}Fr^{213}_{126}$	τ $<5^m$			F. F. Momyer et al., Phys. Rev. 86, 805 (1952).
$_{88}Ra^{213}_{125}$	τ $\sim 2^m$ α			F. F. Momyer et al., Phys. Rev. 86, 805 (1952).
$_{88}Ra^{219}_{131}$	α 8.0		ic	W. W. Meinke et al., Phys. Rev. 85, 429 (1952).
$_{88}Ra^{223}_{135}$	σ(th n,f) <100			S. Peterson, A. Ghiorso, (1947); AECU-2040(1952).
$_{88}Ra^{224}_{136}$	γ ~0.050 0.241 α_K = 0.1 E2		sπ;ce$^-$	S. Rosenblum et al., Compt. rend. 234, 1767(1952).
$_{88}Ra^{226}_{138}$	α 4.8% (4.611)		ic	D. G. Karraker et al., Phys. Rev. 83, 390 (1951).
	α 5.5% (4.611) <0.1% (4.21)		ppl	F. Asaro, I. Perlman, UCRL-1725; NSA 6-3108.
	α ~93.3% (4.8) ~6.5% (4.6) ~0.2% 4.21			G. Bastin-Scoffier, Compt. rend. 233, 945(1951).
	γ 0.1856		sπ;ce$^-$	J. M. Cork et al., Phys. Rev. 83, 681 (1951).
	σ(th n,$\gamma\beta$)Ac^{227} ~19			S. Peterson, NNES 14B, Paper 19.9.
	σ(th n,I) ≤0.1 mb			D. Ames, A. Ghiorso, (1947); AECU-2040 (1952).
$_{88}Ra^{228}_{140}$	σ(th n,$\gamma\beta$)66^mAc ~36			F. Depocas, B. G. Harvey, Phys. Rev. 85, 499(1952).
	σ(th n,f) <2			S. Peterson, A. Ghiorso, (1947); AECU-2040(1952).
$_{88}Ra^{230}_{142}$	τ 1^h β^- 1.2		sπ	W. A. Jenkins, G. T. Seaborg, Phys. Rev. 85, 758A(1952). Th(180 Mev d); chem.
$_{89}Ac^{222}_{133}$	τ 5.5^s d 1.8^m Pa			W. W. Meinke et al., Phys. Rev. 85, 429 (1952).
$_{89}Ac^{227}_{138}$	I ½		S	F. S. Tompkins et al., Phys. Rev. 84, 168(1951).
	σ(th n,f) <2			S. Peterson, A. Ghiorso, (1947); AECU-2040(1952).

$_{89}Ac^{228}_{139}$	β^-	~1	sπ	C. G. Campbell et al., Phil. Mag. 42, 126(1952).
		1.6		
		1.8		
		2.16		
$_{89}Ac^{229}_{140}$	τ	66 ± 5^m		F. Depocas, B. G. Harvey, Phys. Rev. 85, 499 (1952). $Ra^{228}(n,\gamma\beta)$; chem.
	τ	67^m		W. A. Jenkins, G. T. Seaborg, Phys. Rev. 85, 758A (1952). $Ra^{226}(\alpha,p)$.
$_{89}Ac^{230}_{141}$	τ	$<1^m$		W. A. Jenkins, G.
	β^-	2.2	sπ	T. Seaborg, Phys. Rev. 85, 758A (1952). d Ra^{230}.
$_{90}Th^{223}_{133}$	α	7.55	ic	W. W. Meinke et al., Phys. Rev. 85, 429 (1952).
$_{90}Th^{227}_{137}$	σ(th n,f)	~1500		S. Peterson, A. Ghiorso, (1947), AECU-2040(1952).
$_{90}Th^{228}_{138}$	γ	0.0843	s;ce$^-$	S. Rosenblum et al., Compt. rend. 235, 238(1952).
	L_{II}/L_{III} = 1.19		E2	
	All ce$^-$ lines shown due to one γ, not two			
	$\alpha\gamma(\theta)$ indicates $0 \overset{a}{=} 2 \overset{>}{=} 0$ predominant			J. K. Beling et al., Phys. Rev. 84, 155(1951).
	σ(th n,f)	<0.3		M. H. Studier, A. Ghiorso, (1947); AECU-2040(1952).
$_{90}Th^{229}_{139}$	σ(th n,f)	45		M. H. Studier et al. (1947); AECU-2040 (1952).
$_{90}Th^{230}_{140}$	σ(th n,γ)25.6^{h}Th	61		A. H. Jaffey, E. K. Hyde, (1949).
	σ(th n,f)	<1 mb		G. T. Seaborg, W. M. Manning, (1946), AECU-2040(1952).
$_{90}Th^{231}_{141}$	β^- 45%	0.093	sl	M. S. Freedman et al., Phys. Rev. 86, 633A (1952); ANL-4613. d 8.8 × 10^{8y} U^{235}; chem. *Relative intensities (scin).
	11%	0.216		
	44%	0.302		
	γ 1.7*	0.022	sl;ce$^-$	
	0.4*	0.059	scin	
	(sum)	0.063		
	1.0*	0.085		
	0.07*	0.107		
	0.02*	0.122		
	0.02*	0.167		
	0.003*	0.208		
	0.001*	0.230		
$_{90}Th^{232}_{142}$	γ	0.055	ppl;ce$^-$	D. C. Dunlavey, G. T. Seaborg, Phys. Rev. 87, 165 (1952).
	e^-/α = 24%			
	σ_a(th n)	7.0	osc	H. Pomerance, priv. comm. to K. Way (1948).
	σ_a(pile n)	7.2	osc	D. J. Littler, (1948).
	σ_a(pile n)	7.2		A. Wattenberg, priv. comm. to H. Goldsmith (1944).
	σ_t(0.01 – 2,000 ev)	graph		W. W. Havens, Jr., L. J. Rainwater, AECD-3288(1951); AECU-2040(1952).
	E_0	23, 84		
	σ_t(0.025 ev)	19.0		
	σ_t(0.15 – 2 Mev)	graph		AECU-2040(1952).
	σ(th n,γ)23.5^{m}Th	7.6		L. Seren et al. (1944).
	σ(n,γ)23.5^{m}Th	graph		G. A. Linenberger, J. A. Miskel (1946); AECU-2040(1952).
	E_n = 0.015 – 0.35 Mev			
	σ(n,f)	graph		C. L. Bailey et al. (1944–1946); AECU-2040(1952).
	E_n = 1.25 – 6 Mev			
$_{90}Th^{233}_{143}$	τ	23.6^m		W. C. Rutledge et al., Phys. Rev. 86, 775 (1952). $Th^{232}(n,\gamma)$.
	β^-	1.23	a	
	No γ, no e$^-$			
	σ(th n,γ)24.1^{d}Th	1400		E. K. Hyde et al. (1948); AECU-2040 (1952).
$_{91}Pa^{231}_{140}$	γ's		a,crit a	M. Riou, Compt. rend. 234, 1157 (1952). *Photon intensity per disintegration.
	I_γ*	$E_{\gamma\text{-}e}$	α_L	
	20%	0.012		
	16%	0.015		
		(0.040)	>24	
		(0.066)	>6	
	9%	0.027	<4	
	2.5%	0.100	>4	
	4%	0.300		
		α_K = 0.9, K/L = 1.7		
	σ(n,γ)1.32^dPa^{232}	180		A. H. Jaffey, Q. Van Winkle, (1949); AECU-2040(1952).
	σ(n,f)	graph		C. L. Bailey et al. (1944–1946); AECU-2040(1952).
	E_n = 0.45 – 3 Mev			
$_{91}Pa^{232}_{141}$	σ(th n,f)	700		I. Perlman, (1946), AECU-2040(1952).
$_{91}Pa^{233}_{142}$	σ(th n,γ)1.2^m + 6.7^{h}Pa	40		L. T. Katzin, F. T. Hagemann (1946); AECU-2040(1952).
	σ(th n,f)	<0.1		L. Borst, priv. comm. to K. Way (1948); AECU-2040 (1952).
	σ(th n,f)	<1		F. T. Hagemann et al. (1947); AECU-2040 (1952).
$_{91}Pa^{234}_{143}$ 1.14^m	σ(th n, f)	≤500		E. Barney et al. (1946); AECU-2040(1952).

$_{91}Pa^{234}_{143}$ 1.14^{m}	Possible n emitter		M. da Silveira, Portugaliae Phys. 1, 167(1945).
	n radiation assigned to UX_2^* probably is from spontaneous fission of U^{235}.		M. E. Nahmias, Compt. rend. 233, 1185(1951). *M. da Silveira, Portugaliae Phys. 1, 167(1945).
6.7^{h}	σ(th n,f) ≤5000		E. Barney et al. (1946); AECU-2040 (1952).
$_{92}U^{227}_{135}$	τ 1.3^{m} α 6.8	ic	W. W. Meinke et al., Phys. Rev. 85, 429 (1952).
$_{92}U^{232}_{140}$	γ 0.060 e^-/α = 30%	ppl;ce$^-$	D. C. Dunlavey, G. T. Seaborg, Phys. Rev. 87, 165 (1952).
$_{92}U^{234}_{142}$	τ (2.520 ± 0.008) × 10^{5}y		C. A. Kienberger, Phys. Rev. 87, 520 (1952).
	γ ≥35% 0.055	ppl	J. Teillac, Compt. rend. 230, 1056 (1950).
$_{92}U^{235}_{143}$	α 4.39	ic	R. Vestergaard, E. Haeffner, Arkiv för Fysik 3, 557 (1952).
$_{92}U^{236}_{144}$	γ 0.050 e^-/α = 27%	ppl;ce$^-$	D. C. Dunlavey, G. T. Seaborg, Phys. Rev. 87, 165(1952).
$_{92}U^{238}_{146}$	γ 0.045 e^-/α = 22%	ppl;ce$^-$	D. C. Dunlavey, G. T. Seaborg, Phys. Rev. 87, 165 (1952).
	γ ≥24% ~0.050	ppl	G. Albouy, J. Teillac, Compt. rend. 234, 829(1952).
	γ ≥23% ~0.048	ppl	B. Zajac, Phil. Mag. 42, 264(1952).
	σ(th n,f) <5 × 10^{-4}		R. L. Macklin, J. H. Lykins, J. Chem. Phys. 19, 844(1951).
$_{92}U^{233}_{147}$	β^- 1.22 γ 0.075 2.0β and 0.9 γ not found	sl scin	J. R. Huizenga et al., Phys. Rev. 84, 1264 (1951). U^{238} (pile n); chem.
$_{93}Np^{235}_{142}$	τ 410^{d} K < 10% L > 90%	pc	R. A. James et al., Phys. Rev. 85, 369 (1952). U^{235}(20 Mev d,2n).
$_{93}Np^{237}_{144}$	γ's ≤0.065 e^-/α = 80% $e^-e^-\alpha$, $e^-e^-e^-\alpha$	ppl;ce$^-$	D. C. Dunlavey, G. T. Seaborg, Phys. Rev. 87, 165 (1952).
$_{93}Np^{239}_{146}$	β_1^- 0.31 β_3^-0.70 β_2^- 0.44 γ_0 0.049 $\gamma_6$0.210 γ_1 0.057 $\gamma_7$0.227 γ_2 0.061 $\gamma_8$0.276 γ_3 0.067	sl sl; ce$^-$	R. L. Graham, R. E. Bell, Phys. Rev. 83, 222A(1951). $\gamma_3\gamma_8$. No $\gamma_7\gamma_8$. No $\beta_3\gamma$. 1.1×10^{-9} sec delay between β_2 and γ_8, γ_7, and γ_8.
	β^- 0.34 0.65 0.44 0.72 γ 0.0442 0.105 0.0490 0.209 0.0570 0.228 0.0614 0.254 0.0675 0.277 0.286	s≠√2 s≠√2; ce$^-$	E. P. Tomlinson et al., Phys. Rev. 83, 223A(1951).
	No E_β >0.72	sl	J. R. Huizenga et al., Phys Rev. 84, 1264 (1951).
$_{94}Pu^{236}_{142}$	γ 0.045 e^-/α = 20%	ppl;ce$^-$	D. C. Dunlavey, G. T. Seaborg, Phys. Rev. 87, 165 (1952).
$_{94}Pu^{238}_{144}$	γ 0.040 e^-/α = 23%	ppl;ce$^-$	D. C. Dunlavey, G. T. Seaborg, Phys. Rev. 87, 165 (1952).
$_{94}Pu^{239}_{145}$	γ 0.035 0.050 e^-/α = 12%	ppl;ce$^-$	D. C. Dunlavey, G. T. Seaborg, Phys. Rev. 87, 165 (1952).
	$\bar{\sigma}_c$(th n) 361 $\bar{\sigma}_f$(th n) 664 Averages for Maxwellian distribution, kT = 0.025 ev		Office of Classification, AEC, April 7, 1952; Nature 169, 871(1952).
$_{94}Pu^{240}_{146}$	τ 6580^{y}		M. G. Inghram et al., Phys. Rev. 83, 1250(1951).
	τ 6240^{y}		E. F. Westrum Jr., Phys. Rev. 83, 1249(1951).
$_{94}Pu^{242}_{148}$	σ(th n,γ)5^{h} Pu ~100		J. C. Sullivan et al., Phys. Rev. 83, 1267(1951).
$_{94}Pu^{243}_{149}$	τ 5^{h} β^- ~0.5	a	J. C. Sullivan et al., Phys. Rev. 83, 1267(1951).
	τ 5.0^{h} β^- 0.39 γ 0.095 0.12	s,a s,a s,a	S. G. Thompson et al., Phys. Rev. 84, 164(1951). $Pu^{242}(n,\gamma)$.
$_{95}Am^{241}_{146}$	τ 475^{y}		B. B. Cunningham, quoted by L. B. Asprey et al., J. Am. Chem. Soc. 73, 5715(1951).
	470^{y}		B. G. Harvey, Phys. Rev. 85, 482(1952).

$_{95}Am^{241}_{146}$	α 1.4% 5.379 s 14% 5.433 84% 5.476 0.21% 5.503 0.34% 5.535 0.23% 5.546		F. Asaro et al., Phys. Rev. 87, 277 (1952); 85, 758A (1952).
	γ's ≤0.065 ppl;ce$^-$ $e^-/\alpha = 56\%$ $e^-e^-\alpha$		D. C. Dunlavey, G. T. Seaborg, Phys. Rev. 87, 165 (1952).
	γ 6.9%* 0.0263 pc α<20 100%* 0.0597 α<1.5 scin $\tau = 0.063^{\mu s}$ ~0.5% 0.075 ? Levels at 0.114 and 0.043 (from α's) have τ's $<0.15^{\mu s}$, $<0.3^{\mu s}$ Np L x rays		J. K. Beling et al., Phys. Rev. 87, 670 (1952); 86, 797 (1952); 87, 1144 (1952). Pu^{239}(n,γ; n$\gamma\beta$). *Relative photon γ's.
	σ(pile n,γ)400^y Am^{242} ~50		K. Street, Jr.,et al., Phys. Rev. 85, 135 (1952).
$_{95}Am^{242}_{147}$ 16^h	τ 16.01 ± 0.02^h		T. K. Keenan et al., Phys. Rev. 87, 204A(1952).
	σ(pile n,f) ~2000		K. Street, Jr.,et al., Phys. Rev. 85, 135 (1952).
~400^y	σ(pile n,γ)Am^{243} ~2000 σ(pile n,f) ~6000		K. Street, Jr.,et al., Phys. Rev. 85, 135 (1952).
$_{95}Am^{243}_{148}$	σ(pile n,f) <40		K. Street, Jr.,et al., Phys. Rev. 85, 135 (1952).
$_{96}Cm^{240}_{144}$	K <0.5% 52^h Am^{240} not found		G. H. Higgins, K. Street, Jr., Phys. Rev. 86, 252(1952). Pu^{239}(~35 Mev α).
$_{96}Cm^{241}_{145}$	τ 35^d K ~100% α~0.25% 5.89 pc		G. H. Higgins, K. Street, Jr., Phys. Rev. 86, 252(1952). Pu^{239}(~27 Mev α); chem.
$_{96}Cm^{242}_{146}$	α 27% 6.064 s 73% 6.110		F. Asaro et al., Phys. Rev. 87, 277 (1952); 85, 758A (1952).
	γ 0.045 ppl;ce$^-$ $e^-/\alpha = 23\%$		D. C. Dunlavey, G. T. Seaborg, Phys. Rev. 87, 165 (1952).
$_{97}Bk^{245}_{148}$	τ 4.95^d α 34% 5.90 ic 48% 6.15 18% 6.33 $\alpha/K \sim 0.1\%$		E. K. Hulet et al., Phys. Rev. 84, 366(1951). Produced by $Cm^{242,243,244}$(d), chem; not by $Am^{241}(\alpha)$.
$_{98}Cf^{246}_{148}$	τ 35.7^h α 6.75 ic No K		E. K. Hulet et al., Phys. Rev. 84, 366(1951). p Cm^{242}.

Q's Between Ground States

T(d,α)n	+17.578 − 0.030	R. M. Williamson et al., Phys. Rev. 84, 731(1951).
D(γ,n)H^1	−2.231 ± 0.003	J. C. Noyes et al., Phys. Rev. 85, 727A(1952).
H^2(d,n)He^3	+3.24 ± 0.04	H. Bichsel et al., Helv. Phys. Acta 25, 119 (1952).
H^3(p,n)He^3	−0.7647 ± 0.001	T. W. Bonner and J. W. Butler, Phys. Rev. 83, 1091(1951).
Li^6(p,α)He^3	+4.024 ± 0.005	R. M. Williamson et al., Phys. Rev. 84, 731(1951).
Li^6(p,α)He^3	+4.015 ± 0.006	E. R. Collins et al., Nature 167, 682(1951).
H^3(p,γ)He^4	+19.7 ± 0.3 s,pe$^-$	R. S. Rochlin, Phys. Rev. 84, 165(1951).
H^3(d,n)He^4	+17.7 ± 0.3	P. Norwood, L. Rosen, LAMS-1383(uncl)(1952).
Li^7(p,α)He^4	+17.325 ± 0.013	E. R. Collins et al., Nature 167, 682(1951).
Be^8−2He^4	+0.0775 ± 0.004	R. R. Carlson, Phys. Rev. 84, 749(1951).
Li^7(t,α)He^6	+9.79 ± 0.03	J. T. Dewan et al., Phys. Rev. 86, 416(1952).
Li^8(γ,n)Li^7	−5.35 ± 0.20	R. Sher et al., Phys. Rev. 84, 387 (1951).*
Be^9(p,α)Li^6	+2.130 ± 0.010	R. R. Carlson, Phys. Rev. 84, 749 (1951).*
Be^9(p,α)Li^6	+2.123 ± 0.004	C. P. Browne et al., Phys. Rev. 83, 179(1951).
Be^9(p,α)Li^6	+2.123 ± 0.004	R. M. Williamson et al., Phys. Rev. 84, 731(1951).
Be^9(d,α)Li^7	+7.159 ± 0.009	
B^{10}(n,α)Li^7	+2.78 ± 0.02	H. Bichsel et al., Helv. Phys. Acta 25, 119 (1952).
Li^6(t,d)Li^7	+0.982 ± 0.007	T. P. Pepper et al., Phys. Rev. 85, 155(1952).
Li^6(t,p)Li^8	+0.784 ± 0.015	
Li^7(d,p)Li^8	−0.192 ± 0.001	R. M. Williamson et al., Phys. Rev. 84, 731(1951).
Be^9(γ,p)Li^8	−16.93 ± 0.15	B. L. Tucker, E. C. Gregg, Phys. Rev. 87, 907(1952).

$B^{10}(p,\alpha)Be^{7}$	+1.147 ± 0.003	D. S. Craig et al., Phys. Rev. 87, 206A(1952).
$Be^{9}(\gamma,n)Be^{8}$	−1.664 ± 0.002	J. C. Noyes et al., Phys. Rev. 85, 727A(1952).
$Be^{9}(p,d)Be^{8}$	+0.558 ± 0.002	R. M. Williamson et al., Phys. Rev. 84, 731(1951).
$Be^{9}(p,d)Be^{8}$	+0.558 ± 0.005	R. R. Carlson, Phys. Rev. 84, 749(1951).
$Be^{9}(d,t)Be^{8}$	+4.67 + 0.003 ppl	F. A. El-Bedewi, Proc. Phys. Soc. (London) 64A, 947(1951).
$B^{10}(p,He^{3})Be^{8}$	−0.536 ± 0.003	D. S. Craig et al., Phys. Rev. 87, 206A(1952).
$Be^{9}(d,p)Be^{10}$	+4.591 ± 0.008	E. D. Klema, G. C. Phillips, Phys. Rev. 86, 951(1952).
$Be^{9}(d,p)Be^{10}$	+4.55 ± 0.03 ppl	A. J. Salmon, Proc. Phys. Soc. (London) 64A, 848(1951).
$B^{10}(\gamma,n)B^{9}$	−8.55 ± 0.25	R. Sher, et al., Phys. Rev. 84, 387 (1951).*
$Be^{9}(d,n)B^{10}$	+4.44 ± 0.04	J. S. Pruitt et al., Phys. Rev. 87, 534(1952).
$B^{11}(\gamma,n)B^{10}$	−11.50 ± 0.25	R. Sher et al., Phys. Rev. 84, 387(1951).*
$N^{14}(n,\alpha)B^{11}$	−0.24	W. Bollmann, W. Zünti, Helv. Phys. Acta 24, 517(1951).
$C^{12}(\gamma,n)C^{11}$	−18.7	L. Katz, A. G. W. Cameron, Can. J. Phys. 29, 518(1951) and L. Katz et al., Can. J. Research 28A, 113(1950).
$N^{15}(p,\alpha)C^{12}$	+4.960 ± 0.006	E. R. Collins et al., Nature 167, 682(1951).
$C^{12}(d,p)C^{13}$	+2.729 ± 0.009	W. M. Gibson, J. Catalá, Anales real soc. españ. fis. y quim. 46A, 307 (1950).
$C^{12}(d,p)C^{13}$	+2.732 ± 0.006	E. D. Klema, G. C. Phillips, Phys. Rev. 86, 951(1952).
$N^{14}(n,p)C^{14}$	+0.609 ± 0.005	R. Ishuwari, K. Yuasa, Memoirs Coll. Sci. Univ. Kyoto. A26, 151 (1950).
$O^{15}(d,\alpha)N^{14}$	+3.113 ± 0.004	D. S. Craig et al., Phys. Rev. 87, 206A(1952).
$O^{16}(d,\alpha)N^{14}$	+3.111	R. J. Van de Graaff et al., Phys. Rev. 86, 966(1952).
$O^{16}(d,\alpha)N^{14}$	+ 3.09 ± 0.02	H. B. Burrows et al., Proc. Roy. Soc. (London) 209A, 478(1951).
$N^{14}(d,n)O^{15}$	+5.1	W. B. Rose et al., Phys. Rev. 87, 382(1952).
$C^{13}(\alpha,n)O^{16}$	+2.1 ± 0.1	G. A. Jones, D. H. Wilkinson, Proc. Phys. Soc., (London) A64, 756(1951).
$O^{16}(d,p)O^{17}$	+1.918 ± 0.008	E. D. Klema, G. C. Phillips, Phys. Rev. 86, 951(1952).
$O^{16}(d,p)O^{17}$ $F^{19}(d,\alpha)O^{17}$	+ 1.93 ± 0.01 +10.04 ± 0.02	H. B. Burrows et al., Proc. Roy. Soc. (London) 209A, 478(1951).
$O^{16}(d,n)F^{17}$	−1.51	F. A. El-Bedewi et al., Proc. Phys. Soc. (London) A64, 757 (1951).
$O^{16}(d,n)F^{17}$	−1.631 ± 0.003	T. W. Bonner and J. W. Butler, Phys. Rev. 83, 1091(1951).
$F^{19}(\gamma,2n)F^{17}$ $F^{19}(\gamma,n)F^{18}$	−19.4 −10.7	R. J. Horsley et al., Phys. Rev. 87, 756(1952).
$Ne^{20}(d,\alpha)F^{18}$	+2.78 ± 0.02 ppl	R. Middleton, C. T. Tai, Proc. Phys. Soc. (London) 64A, 801(1951).
$O^{18}(\alpha,p)F^{19}$	−8.08 ± 0.1	M. L. Bullock, M. B. Sampson, Phys. Rev. 84, 967(1951).
$F^{19}(d,p)F^{20}$	+4.39 ± 0.03	H. B. Burrows et al., Proc. Roy. Soc. (London) 209A, 478(1951); Phys. Rev. 85, 155(1951).
$F^{19}(n,\gamma)F^{20}$	+6.63 ± 0.03	B. B. Kinsey et al., Phys. Rev. 83, 519(1951).
$Ne^{22}(d,\alpha)F^{20}$	+2.62 ± 0.10 ppl	R. Middleton, C. T. Tai, Proc. Phys. Soc. (London) 64A, 801(1951).
$F^{19}(p,n)Ne^{19}$	−4.040 ± 0.004	H. B. Willard et al., Phys. Rev. 85, 849(1952).
$F^{19}(p,n)Ne^{19}$	−4.1	J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951).
$Na^{23}(p,\alpha)Ne^{20}$ $Ne^{20}(d,p)Ne^{21}$	+2.372 ± 0.008 +4.529 ± 0.007	D. M. Van Patter et al., Phys. Rev. 85, 142(1952); MIT Progress Report, Nov. 1951, 44.
$Ne^{20}(d,p)Ne^{21}$	+4.54 ± 0.04 ppl	R. Middleton, C. T. Tai, Proc. Phys. Soc. (London) 64A, 801(1951).
$Ne^{22}(d,p)Ne^{23}$	+2.964 ± 0.007	D. M. Van Patter et al., Phys. Rev. 85, 142(1952); MIT Progress Report, Nov. 1951, 44.
$Na^{23}(\gamma,n)Na^{22}$	−12.05 ± 0.20	R. Sher et al., Phys. Rev. 84, 387 (1951).*
$Mg^{25}(d,\alpha)Na^{23}$	+7.019 ± 0.013	D. M. Van Patter et al., Phys. Rev. 85, 142(1952); MIT Progress Report, Nov. 1951, 44.
$Na^{23}(p,n)Mg^{23}$	−4.88 ± 0.01	H. B. Willard et al., Phys. Rev. 86, 259(1952).
$Na^{23}(p,n)Mg^{23}$	−4.97	J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951).

$Mg^{24}(\gamma,n)Mg^{23}$	−16.55 ± 0.25	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Mg^{25}(\gamma,n)Mg^{24}$	−7.25 ± 0.20	
$Al^{27}(p,\alpha)Mg^{24}$	+1.595 ± 0.007	D. M. Van Patter et al., Phys. Rev. 85, 142(1952); MIT Progress Report, Nov. 1951, 44.
$Mg^{24}(d,p)Mg^{25}$	+5.097 ± 0.007	
$Mg^{24}(d,p)Mg^{25}$	+4.99 ± 0.10	J. Ambrosen, Nature 169, 408(1952).
$Mg^{26}(\gamma,n)Mg^{25}$	−11.15 ± 0.20	R. Sher et al., Phys. Rev. 84, 387 (1951).*
$Al^{27}(d,\alpha)Mg^{25}$	+6.694 ± 0.010	H. Enge et al., Phys. Rev. 83, 31(1951).
$Mg^{25}(d,p)Mg^{26}$	+8.86 ± 0.10	J. Ambrosen, Nature 169, 408(1952).
$Mg^{25}(d,p)Mg^{26}$	+8.880 ± 0.012	D. M. Van Patter et al., Phys. Rev. 85, 142(1952); MIT Progress Report, Nov. 1951, 44.
$Mg^{26}(d,p)Mg^{27}$	+4.207 ± 0.006	
$Mg^{26}(d,p)Mg^{27}$	+4.16 ± 0.10	J. Ambrosen, Nature 169, 408(1952).
$Mg^{24}(p,n)Al^{24}$	−14.8 ± 0.3	A. C. Birge, Phys. Rev. 85, 753A(1952).
$Mg^{25,26}(p,n)Al$	−5.1	J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951).
$Al^{27}(\gamma,n)Al^{26}$	−12.75 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Si^{29}(d,\alpha)Al^{27}$	+5.994 ± 0.011	D. M. Van Patter, W. W. Buechner, Phys. Rev. 87, 51(1952); 85, 142(1952).
$Si^{29}(d,\alpha)Al^{27}$	+5.994 ± 0.011	D. M. Van Patter et al., Phys. Rev. 85, 142(1952); MIT Progress Report, Nov. 1951, 44.
$Al^{27}(n,\gamma)Al^{28}$	+7.6	B. Hamermesh, V. Hummel, Phys. Rev. 83, 663 (1951).
$Al^{27}(n,\gamma)Al^{28}$	+7.72 ± 0.01	B. B. Kinsey et al., Phys. Rev. 83, 519(1951).
$Al^{27}(d,p)Al^{28}$	+5.53	K. K. Keller, Phys. Rev. 84, 884(1951).
$Al^{27}(d,p)Al^{28}$	+5.494 ± 0.010	H. Enge et al., Phys. Rev. 83, 31(1951).
$Al^{27}(p,n)Si^{27}$	−5.9	J. P. Blaser et al., Helv. Phys. Acta 24, 465(1951).
$Si^{29}(\gamma,n)Si^{28}$	−8.45 ± 0.20	R. Sher et al., Phys. Rev. 84, 387 (1951).*
$P^{31}(p,\alpha)Si^{28}$	+1.909 ± 0.010	D. M. Van Patter et al., Phys. Rev. 85, 142 (1952); MIT Progress Report, Nov. 1951, 44.
$Si^{28}(n,\gamma)Si^{29}$	+8.51 ± 0.04	B. B. Kinsey et al., Phys. Rev. 83, 519(1951).
$Si^{28}(d,p)Si^{29}$	6.246 ± 0.010	P. M. Endt et al., Phys. Rev. 83, 491(1951).
$Si^{28}(d,p)Si^{29}$	+6.246 ± 0.010	D. M. Van Patter, W. W. Buechner, Phys. Rev. 87, 51(1952); 85, 142(1952).
$P^{31}(d,\alpha)Si^{29}$	+8.17 ± 0.02	P. M. Endt et al., Phys. Rev. 83, 491(1951).
$P^{31}(d,\alpha)Si^{29}$	+8.158 ± 0.011	D. M. Van Patter et al., Phys. Rev. 85, 142(1952); MIT Progress Report, Nov. 1951, 44.
$Al^{27}(\alpha,p)Si^{30}$	+2.3 ± 0.4	H. Slätis et al., Arkiv för Fysik 3, 315(1952); Phys. Rev. 81, 641(1951).
$Si^{29}(n,\gamma)Si^{30}$	+ 10.55 ± 0.05	B. B. Kinsey et al., Phys. Rev. 83, 519(1951).
$Si^{29}(d,p)Si^{30}$	+ 8.388 ± 0.013	D. M. Van Patter, W. W. Buechner, Phys. Rev. 87, 51(1952); 85, 142(1952).
$Si^{30}(d,p)Si^{31}$	+ 4.364 ± 0.007	
$Si^{28}(d,n)P^{29}$	+ 0.29 ± 0.04	C. E. Mandeville et al., Phys. Rev. 85, 193(1952); 85, 725A(1952).
$Si^{29}(d,n)P^{30}$	+ 3.27 ± 0.04	
$P^{31}(\gamma,n)P^{30}$	−12.05 ± 0.20	R. Sher et al., Phys. Rev. 84, 387 (1951).*
$Si^{30}(d,n)P^{31}$	+ 4.92 ± 0.04	C. E. Mandeville et al., Phys. Rev. 85, 193(1952); 85, 725A(1952).
$P^{31}(d,p)P^{32}$	+ 5.704 ± 0.008	D. M. Van Patter et al., Phys. Rev. 85, 142 (1952); MIT Progress Report, Nov. 1951, 44.
$S^{32}(\gamma,n)S^{31}$	−15.0 ± 0.1	R. N. H. Haslam et al., Can J. Physics 30, 257(1952).
$P^{31}(d,n)S^{32}$	+6.2	S. C. Snowdon, Phys. Rev. 87, 1022(1952).
$P^{32}(d,n)S^{32}$	+ 6.81 ± 0.08	F. A. El-Bedewi et al., Nature 169, 235(1952).
$P^{31}(d,n)S^{32}$	+6.3 ± 0.2	S. C. Snowdon, Phys. Rev. 86, 630A(1952).
$S^{34}(\gamma,n)S^{33}$	− 10.85 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Cl^{35}(\gamma,n)Cl^{34}$ $Cl^{37}(\gamma,n)Cl^{36}$	−9.95 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1951).*
$A^{40}(\gamma,p)Cl^{39}$	− 10.8 ± 0.1	D. H. Wilkinson, J. H. Carver, Phys. Rev. 83, 466(1951).
$Cl^{37}(p,n)A^{37}$	−1.598 ± 0.002	W. A. Schoenfeld et al., Phys. Rev. 85, 873(1952).
$Ti^{46}(d,p)Ti^{47}$	+6.45 ± 0.05	G. F. Pieper, Phys. Rev. 87, 215A(1952); verbal report.
$Ti^{47}(d,p)Ti^{48}$	+8.14 ± 0.05	
$Ti^{48}(d,p)Ti^{49}$	+5.81 ± 0.04	
$Ti^{49}(d,p)Ti^{50}$	+8.62 ± 0.05	
$Ti^{50}(d,p)Ti^{51}$	+4.11 ± 0.07	

$V^{51}(\gamma,n)V^{50}$	−11.15 ± 0.20	R. Sher et al., Phys. Rev. 84, 387 (1951).*
$Cr^{52}(\gamma,n)Cr^{51}$	−11.80 ± 0.25	
$Cr^{53}(\gamma,n)Cr^{52}$	−7.75 ± 0.20	
$Cr^{53}(p,n)Mn^{53}$	−1.380 ± 0.008	J. A. Lovington et al., Phys. Rev. 85, 585(1952).
$Cr^{54}(p,n)Mn^{54}$	−2.163 ± 0.005	
$Mn^{55}(\gamma,n)Mn^{54}$	−10.00 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Mn^{55}(n,\gamma)Mn^{56}$	+7.2	B. Hamermesh, V. Hummel, Phys. Rev. 83, 663 (1951).
$Mn^{55}(n,\gamma)Mn^{56}$	+7.16 ± 0.005	R. W. Pringle, G. Isford, Phys. Rev. 83, 467(1951).
$Mn^{55}(p,n)Fe^{55}$	−1.01	P. H. Stelson, W. M. Preston, Phys. Rev. 83, 469(1951).
$Fe^{56}(\gamma,n)Fe^{55}$	−11.15 ± 0.25	R. Sher et al., Phys. Rev. 84, 387 (1951).*
$Fe^{57}(\gamma,n)Fe^{56}$	−7.75 ± 0.20	
$Fe^{56}(n,\gamma)Fe^{57}$	+7.4	B. Hamermesh, V. Hummel, Phys. Rev. 83, 663 (1951).
$Co^{59}(\gamma,n)Co^{58}$	−10.25 ± 0.20	R. Sher et al., Phys. Rev. 84, 387 (1951).*
$Co^{59}(d,p)Co^{60}$	+5.30	D. C. Hoesterey, Phys. Rev. 87, 216A(1952); verbal report.
$Co^{59}(p,n)Ni^{59}$	−1.857 ± 0.003	J. J. McCue and W. M. Preston, Phys. Rev. 84, 384(1951).
$Ni^{60}(d,p)Ni^{61}$	+6.30	D. C. Hoesterey, Phys. Rev. 87, 216A(1952); verbal report.
$Ni^{62}(p,n)Cu^{62}$	−4.6	J. P. Blaser et al., Helv. Phys. Acta 24, 441(1951).
$Cu^{63}(\gamma,n)Cu^{62}$	−10.85 ± 0.20	R. Sher et al., Phys. Rev. 84, 387 (1951).*
$Cu^{65}(\gamma,n)Cu^{64}$	−9.75 ± 0.20	
$Ni^{64}(p,n)Cu^{64}$	−2.5	J. P. Blaser et al., Helv. Phys. Acta 24, 441(1951).
$Cu^{63}(d,p)Cu^{64}$	+5.66	D. C. Hoesterey, Phys. Rev. 87, 216A(1952); verbal report.
$Zn^{64}(\gamma,n)Zn^{63}$	−11.65 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Cu^{63}(\gamma,n)Zn^{62}$	−4.13 ± 0.02	H. B. Willard et al., ORNL-1278(1951).
$Zn^{66}(\gamma,n)Zn^{65}$	−11.15 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1952).
$Cu^{65}(p,n)Zn^{65}$	−2.13 ± 0.02	H. B. Willard et al., ORNL-1278(1951).
$Zn^{67}(\gamma,n)Zn^{66}$	−7.00 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Zn^{68}(\gamma,n)Zn^{67}$	−10.15 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Ga^{69}(\gamma,n)Ga^{68}$	−10.10 ± 0.20	
$Ga^{71}(\gamma,n)Ga^{70}$	−9.05 ± 0.20	
$As^{75}(\gamma,n)As^{74}$	−10.10 ± 0.20	
$Se^{?}(\gamma,n)Se^{?}$	−7.30 ± 0.20	
$Se^{?}(\gamma,n)Se^{?}$	−9.35 ± 0.20	
$Br^{79}(\gamma,n)Br^{78}$	−10.60 ± 0.20	
$Se^{78}(p,n)Br^{78}$	−4.4	J. P. Blaser et al., Helv. Phys. Acta 24, 441(1951).
$Br^{81}(\gamma,n)Br^{80}$	−9.95 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Se^{80}(p,n)Br^{80}$	−2.6	J. P. Blaser et al., Helv. Phys. Acta 24, 441(1951).
$Sr^{86}(\gamma,n)Sr^{85}$	−9.50 ± 0.20	R. Sher et al., Phys. Rev. 84, 387 (1951).*
$Sr^{87}(\gamma,n)Sr^{86}$	−8.40 ± 0.20	
$Sr^{88}(\gamma,n)Sr^{87}$	−11.15 ± 0.20	
$Sr^{87}(p,n)Y^{87}$	−2.5	J. P. Blaser et al., Helv. Phys. Acta 24, 441(1951).
$Y^{89}(p,n)Zr^{89}$	−3.5	
$Nb^{93}(\gamma,n)Nb^{92}$	−8.70 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Zr^{92}(p,n)Nb^{92}$	−2.5	J. P. Blaser et al., Helv. Phys. Acta 24, 441(1951).
$Zr^{96}(p,n)Nb^{96}$	−2.6	
$Nb^{93}(p,n)Mo^{93}$	−3.7	
$Mo^{?}(\gamma,n)Mo^{?}$	−6.75 ± 0.25	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Mo^{?}(\gamma,n)Mo^{?}$	−7.95 ± 0.25	
$Mo^{94}(p,n)Tc^{94}$	−5.0	J. P. Blaser et al., Helv. Phys. Acta 24, 441(1951).
$Mo^{95}(p,n)Tc^{95}$	−3.6	
$Mo^{96}(p,n)Tc^{96}$	−3.8	
$Ru^{?}(\gamma,n)Ru^{?}$	−7.05 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Ru^{?}(\gamma,n)Ru^{?}$	−9.50 ± 0.20	
$Ru^{100}(p,n)Rh^{100}$	−4.1	J. P. Blaser et al., Helv. Phys. Acta 24, 441(1951).
$Ru^{101}(p,n)Rh^{101}$	−2.6	
$Rh^{103}(\gamma,n)Rh^{102}$	−9.35 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Pd^{?}(\gamma,n)Pd^{?}$	−7.05 ± 0.20	
$Pd^{?}(\gamma,n)Pd^{?}$	−9.35 ± 0.20	
$Ag^{109}(\gamma,n)Ag^{108}$	−9.05 ± 0.20	
$Cd^{113}(\gamma,n)Cd^{112}$	−6.55 ± 0.20	
$Cd^{113}(n,\gamma)Cd^{114}$	+9.2	R. W. Pringle et al., Phys. Rev. 87, 1016 (1952).

$In^{115}(\gamma,n)In^{114}$	−9.05 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Sn^{118}(\gamma,n)Sn^{117}$	−9.10 ± 0.20	
$Sn^{119}(\gamma,n)Sn^{118}$	−6.60 ± 0.20	
$Sb^{121}(\gamma,n)Sb^{120}$ $Sb^{123}(\gamma,n)Sb^{122}$	−8.95 ± 0.25	
$Te^{?}(\gamma,n)Te^{?}$	−6.50 ± 0.20	
$Te^{?}(\gamma,n)Te^{?}$	−8.55 ± 0.20	
$I^{127}(\gamma,n)I^{126}$	−9.10 ± 0.20	
$Te^{128}(p,n)I^{128}$ $Te^{130}(p,n)I^{130}$	−3.2 −3.3	J. P. Blaser et al., Helv. Phys. Acta 24, 441(1951).
$Cs^{133}(\gamma,n)Cs^{132}$	−9.05 ± 0.20	R. Sher et al., Phys. Rev. 84, 387(1951).*
$Ba^{?}(\gamma,n)Ba^{?}$	−6.80 ± 0.20	
$Ba^{?}(\gamma,n)Ba^{?}$	−8.55 ± 0.25	
$La^{139}(\gamma,n)La^{138}$	−8.80 ± 0.20	
$Ce^{140}(\gamma,n)Ce^{139}$	−9.05 ± 0.20	
$Ce^{142}(\gamma,n)Ce^{141}$	−7.15 ± 0.20	
$Ta^{181}(\gamma,n)Ta^{180}$	−7.55 ± 0.20	
$W^{?}(\gamma,n)W^{?}$	−6.25 ± 0.30	
$W^{?}(\gamma,n)W^{?}$	−7.15 ± 0.30	
$Re^{187}(\gamma,n)Re^{186}$	−7.30 ± 0.30	
$Ir^{193}(\gamma,n)Ir^{192}$	−7.80 ± 0.20	
$Pt^{194}(\gamma,n)Pt^{193}$	−9.50 ± 0.20	
$Pt^{195}(\gamma,n)Pt^{194}$	−6.10 ± 0.20	
$Pt^{196}(\gamma,n)Pt^{195}$	−8.20 ± 0.20	
$Au^{197}(\gamma,n)Au^{196}$	−7.90 ± 0.20	
$Tl^{203}(\gamma,n)Tl^{202}$	−8.80 ± 0.20	
$Tl^{205}(\gamma,n)Tl^{204}$	−7.55 ± 0.20	
$Pb^{207}(\gamma,n)Pb^{206}$	−6.75 ± 0.20	
$Pb^{208}(\gamma,n)Pb^{207}$	−7.30 ± 0.20	
$Bi^{209}(\gamma,n)Bi^{208}$	−7.40 ± 0.20	
$Th^{232}(\gamma,n)Th^{231}$	−6.35 ± 0.04	L. B. Magnusson et al., Phys. Rev. 84, 166(1951)

*Detected n's in BF_3 counters.

Packing Fraction Differences, Δf, in Units 10^{-4} amu

Entries under both members of doublets except for those involving hydrocarbons

Doublet	Δf	Reference
$CH_4 - O$	22.777 ± 0.003	K. Ogata, H. Matsuda, Phys. Rev. 83, 180(1951).
$C_2H_4 - CO$	13.018 ± 0.002	
$N^{14} - CH_2$	−8.996 ± 0.001	
$N_2^{14} - C_2H_4$	−9.000 ± 0.002	
$N^{15} - CH_3$	−15.597 ± 0.003	
$S^{32} - O_2$	−5.550 ± 0.002	T. L. Collins et al., Phys. Rev. 84, 717(1951).
$S^{33}O - C_4$	−6.902 ± 0.003	
$CO_2 - C_3H_8$	−16.558 ± 0.004	
$Si^{28} - CO$	−7.6 ± 0.2	J. F. Norton, P. D. Zemany, J. Chem. Phys. 20, 525(1952).
$Si^{28} - N_2$	−10.5 ± 0.1	
$Si^{28} - C_2H_4$	−21.3 ± 0.1	
$S^{32} - Ni^{64}$	+2.65 ± 0.02	H. E. Duckworth et al., Phys. Rev. 83, 1114(1951).
$S^{33}O - C_4H$	−8.446 ± 0.009	T. L. Collins et al., Phys. Rev. 84, 717(1951).
$S^{34}O - C_4H_2$	−10.580 ± 0.008	
$HCl^{35} - C_3$	−6.484 ± 0.012	
$HCl^{37} - C_3H_2$	−11.056 ± 0.012	
$A^{36} - C_3$	−9.028 ± 0.009	
$A^{36} - H_2O$	−14.899 ± 0.015	
$A^{38} - C_3H_2$	−13.924 ± 0.010	
$K^{39} - C_3H_3$	−15.360 ± 0.007	
$K^{39} - C_2HN$	−12.20 ± 0.02	A. Henglein, Z. Naturforsch. 6a, 745(1951).
$K^{41} - C_2H_3N$	−15.88 ± 0.01	
$K^{41} - C_3H_5$	−18.869 ± 0.008	T. L. Collins et al., Phys. Rev. 84, 717(1951).
$Ca^{42} - C_3H_6$	−21.011 ± 0.008	
$Ca^{43} - C_3H_7$	−22.335 ± 0.012	
$Ca^{44} - CO_2$	−7.865 ± 0.013	
$Ca^{48} - C_4$	−9.915 ± 0.021	
$Sc^{45}O - C_2O_2H_5$	−12.839 ± 0.007	
$Ti^{46} - CH_2S$	−7.696 ± 0.009	T. L. Collins et al., Phys. Rev. 86, 408(1952).
$Ti^{47} - CH_3S$	−9.32 ± 0.02	
$Ti^{47} - Pr^{141}$	−3.64 ± 0.03	H. E. Duckworth et al., Phys. Rev. 83, 1114(1951).
$Ti^{48} - C_4$	−10.88 ± 0.01	T. L. Collins et al., Phys. Rev. 86, 408(1952).
$Ti^{49} - C_4H$	−12.23 ± 0.01	
$Ti^{50} - C_4H_2$	−14.178 ± 0.006	
$V^{51} - C_4H_3$	−15.54 ± 0.01	
$Cr^{50} - C_4H_2$	−13.91 ± 0.01	
$Cr^{52} - C_4H_4$	−17.48 ± 0.02	
$Cr^{53} - C_4H_5$	−18.56 ± 0.02	
$Cr^{54} - C_4H_6$	−19.85 ± 0.04	
$Mn^{55} - C_4H_7$	−21.20 ± 0.02	
$Fe^{54} - C_4H_6$	−19.85 ± 0.01	
$Fe^{56} - C_4H_8$	−22.82 ± 0.02	
$Fe^{57} - C_4H_9$	−23.70 ± 0.02	
$Fe^{58} - C_4H_{10}$	−24.96 ± 0.07	
$Fe^{58} - Th^{232}$	−13.17 ± 0.05	G. S. Stanford et al., Phys. Rev. 85, 1039(1952).
$Fe^{58} - Th^{232}$	−13.17 ± 0.06	G. S. Stanford, H. E. Duckworth, Phys. Rev. 83, 229 (A)(1951).
$Co^{59} - Sn^{118}$	− 2.99 ± 0.02	G. S. Stanford et al., Phys. Rev. 85, 1039(1952).
$Ni^{58} - C_4H_{10}$	−24.72 ± 0.02	T. L. Collins et al., Phys. Rev. 86, 408(1952).
$Ni^{60} - C_5$	−11.70 ± 0.05	

$Ni^{60} - Hf^{180}$	−8.57 ± 0.03	H. E. Duckworth et al., Phys. Rev. 83, 1114(1951).
$Ni^{61} - C_5H$	−12.83 ± 0.04	T. L. Collins et al., Phys. Rev. 86, 408(1952).
$Ni^{62} - C_5H_2$	−14.30 ± 0.01	
$Ni^{64} - SO_2$	−5.42 ± 0.01	
$Ni^{64} - O^{16}$	−8.25 ± 0.03	H. E. Duckworth et al., Phys. Rev. 83, 1114(1951).
$Ni^{64} - S^{32}$	−2.65 ± 0.02	
$Cu^{63} - Te^{126}$	−3.61 ± 0.07	
$Cu^{63} - C_5H_3$	−14.982 ± 0.008	T. L. Collins et al., Phys. Rev. 86, 408(1952).
$Cu^{65} - C_5H_5$	−17.168 ± 0.008	
$Cu^{65} - Te^{130}$	−3.98 ± 0.06	H. E. Duckworth et al., Phys. Rev. 83, 1114(1951).
$Zn^{64} - Te^{128}$	−3.91 ± 0.07	
$Zn^{64} - SO_2$	−5.106 ± 0.003	T. L. Collins et al., Phys. Rev. 86, 408(1952).
$Zn^{64} - O_2$	−7.889 ± 0.007	
$Zn^{66} - C_5H_6$	−18.314 ± 0.008	
$Zn^{67} - C_5H_7$	−19.116 ± 0.008	
$Zn^{68} - C_5H_8$	−20.222 ± 0.009	
$Zn^{70} - C_5H_{10}$	−21.840 ± 0.007	
$Ge^{70} - Ce^{140}$	−4.25 ± 0.03	H. E. Duckworth et al., Phys. Rev. 83, 1114(1951).
$Ge^{72} - Nd^{144}$	−4.85 ± 0.07	
$Ge^{73} - Nd^{146}$	−4.64 ± 0.08	
$Kr^{82} - C_5H_9$	−20.219 ± 0.03	C. L. Kegley, H. E. Duckworth, Phys. Rev. 83, 229(A)(1951).
$Sr^{88} - Hf^{176}$	−7.11 ± 0.04	H. E. Duckworth et al., Phys. Rev. 83, 1114(1951).
$Y^{89} - Hf^{178}$	−7.07 ± 0.05	
$Zr^{90} - Hf^{180}$	−7.70 ± 0.03	
$Zr^{91} - W^{182}$	−7.45 ± 0.04	
$Zr^{92} - Ba^{138}$	−3.58 ± 0.05	
$Zr^{92} - W^{184}$	−7.53 ± 0.04	
$Mo^{94} - Pr^{141}$	−2.54 ± 0.05	
$Mo^{96} - Nd^{144}$	−3.66 ± 0.03	
$Mo^{100} - Nd^{150}$	−4.09 ± 0.04	
$Pd^{104} - Pb^{208}$	− 8.06 ± 0.02	G. S. Stanford et al., Phys. Rev. 85, 1039(1952).
$Sn^{116} - Th^{232}$	−10.06 ± 0.03	
$Sn^{116} - Th^{232}$	−9.89 ± 0.03	G. S. Stanford, H. E. Duckworth, Phys. Rev. 83, 229(A)(1951).
$Sn^{117} - U^{234}$	−10.01 ± 0.03	G. S. Stanford et al., Phys. Rev. 85, 1039(1952).
$Sn^{118} - Co^{59}$	+ 2.99 ± 0.02	
$Sn^{119} - U^{238}$	−10.19 ± 0.03	
$Sn^{119} - U^{238}$	−10.24 ± 0.03	G. S. Stanford, A. E. Duckworth, Phys. Rev. 83, 229 (A)(1951).
$Te^{126} - Cu^{63}$	+3.61 ± 0.07	H. E. Duckworth et al., Phys. Rev. 83, 1114(1951).
$Te^{128} - Zn^{64}$	+3.91 ± 0.07	
$Te^{130} - Cu^{65}$	+3.98 ± 0.06	
$Te^{130} - Pt^{195}$	−5.45 ± 0.11	
$Xe^{129} - C_5H_7$	−20.15 ± 0.02	C. L. Kegley, H. E. Duckworth, Phys. Rev. 83, 229(A)(1951).
$Xe^{130} - C_2OH_3$	−11.68 ± 0.02	
$Xe^{132} - C_2OH_4$	−13.08 ± 0.02	
$Xe^{132} - CO_2$	−4.90 ± 0.02	
$Ba^{138} - Pb^{207}$	− 5.62 ± 0.05	G. S. Stanford, H. E. Duckworth, Phys. Rev. 83, 229 (A)(1951).
$Ba^{138} - Zr^{92}$	+3.58 ± 0.05	H. E. Duckworth et al., Phys. Rev. 83, 1114(1951).
$Ce^{140} - Ge^{70}$	+4.25 ± 0.03	
$Pr^{141} - Ti^{47}$	+3.64 ± 0.03	
$Pr^{141} - Mo^{94}$	+2.54 ± 0.05	
$Nd^{144} - Ge^{72}$	+4.85 ± 0.07	
$Nd^{144} - Mo^{96}$	+3.66 ± 0.03	
$Nd^{146} - Ge^{73}$	+4.64 ± 0.08	H. E. Duckworth et al., Phys. Rev. 83, 1114(1951)
$Nd^{150} - Mo^{100}$	+4.09 ± 0.04	
$Hf^{176} - Sr^{88}$	+7.11 ± 0.04	
$Hf^{180} - Ni^{60}$	+8.57 ± 0.03	
$Hf^{180} - Zr^{90}$	+7.70 ± 0.03	
$Hf^{178} - Y^{89}$	+7.07 ± 0.05	
$W^{182} - Zr^{91}$	+7.45 ± 0.04	
$W^{184} - Zr^{92}$	+7.53 ± 0.04	
$Pt^{195} - Te^{130}$	+5.45 ± 0.11	
$Pb^{207} - Ba^{138}$	+ 5.62 ± 0.05	G. S. Standford et al., Phys. Rev. 85, 1039(1952).
$Pb^{208} - Pd^{104}$	+ 8.06 ± 0.02	
$Th^{232} - Fe^{58}$	13.17 ± 0.05	
$Th^{232} - Sn^{116}$	+10.06 ± 0.03	
$Th^{232} - Fe^{58}$	+13.17 ± 0.06	G. S. Stanford, H. E. Duckworth, Phys. Rev. 83, 229(A)(1951).
$Th^{232} - Sn^{116}$	+9.89 ± 0.03	
$U^{238} - Sn^{119}$	+10.24 ± 0.03	
$U^{234} - Sn^{117}$	+10.01 ± 0.03	G. S. Stanford et al., Phys. Rev. 85, 1039 (1952).
$U^{238} - Sn^{119}$	+10.19 ± 0.03	

Mass Values

Atom	Mass	Reference
Na^{23}	22.99665 ±0.00008	A. Henglein, Z. Naturforsch. 6a, 745(1951). Double doublet
Pb^{208}	208.0416 ±0.0015	P. I. Richards et al., Phys. Rev. 85, 630(1952). Time of flight.
Bi^{209}	209.0466 ±0.0015	

Mass Values—Time of Flight Measurements

Atom	Mass	Reference
S^{32}	31.983 ± 0.001	E. E. Hays et al., Phys. Rev. 84, 824(1951); 85, 1065(1952)
Cl^{35}	34.9805 ± 0.0005	
K^{41}	40.975 ± 0.002	
Br^{79}	78.944 ± 0.001	
Br^{81}	80.943 ± 0.001	
Kr^{84}	83.938 ± 0.001	
Rb^{85}	84.931 ± 0.002	
Rb^{87}	86.930 ± 0.002	
I^{127}	126.946 ± 0.001	
Xe^{129}	128.946 ± 0.002	
Xe^{130}	129.945 ± 0.002	
Xe^{131}	130.944 ± 0.002	
Xe^{132}	131.945 ± 0.002	
Xe^{134}	133.947 ± 0.002	

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